



## *Manchester Education Precinct, 1967*

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# Manchester Education Precinct

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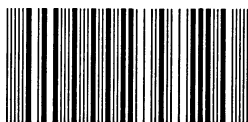
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# Manchester Education Precinct

The Final Report of the Planning Consultants 1967

Commissioned jointly by:

The Corporation of Manchester  
The University of Manchester  
The University of Manchester Institute of  
Science and Technology  
The United Manchester Hospitals

Planning Consultants:

Hugh Wilson and Lewis Womersley  
Chartered Architects and Town Planners  
117–119 Portland Street, Manchester 1





1	Introduction	6
2	The site	9
3	Capacity of site	13
4	Access to the site and car parking	17
	The present situation	19
	Public transport	19
	Car parking	19
5	Road proposals	23
	Initial appraisal	24
	Traffic surveys	24
	Existing road network	25
	Short-term measures	25
	Longer-term measures	25
	The 'Inner Ring' road	27
	Prospects after 1972	27
6	The Precinct Plan	29
	Ground conditions	31
	Noise	31
	Climate	31
	Major land uses	31
	Residential	31
	Recreational	33
	Service traffic and car parking	33
	Pedestrian circulation	33
	Planning grid	33
7	Town and Gown	41
	Shopping needs	43
	Sub-centre and minor facilities	43
	The Precinct Centre	43
	Layout of the Precinct Centre	43
8	University plan	47
	Present position	49
	Service road network	49
	Laboratories and workshops	49
	Other teaching space	49
	Libraries and reading rooms	49
	Administration	52
	Dining, social and ceremonial space	52
	Student communal	53
	Pedestrian system	53
	Regional Computing Centre and	
	Computer Science Building	53
	Medical School	54
	Metallurgy	54
	Economics and Social Science	54
	Museum	54
	Further development	54
9	Institute plan	55
	Areas A and C	57
	Car parking	57
	Area B	57
	Student Quarter	58
	Other areas	58
10	City colleges plan	65
	Car parking	67
	Northern College of Music	67
	Manchester College of Art and Design	67
	John Dalton College	67
	Adult Education College	67
	Teacher Training College	68
	Student Housing and other uses	68
11	Hospitals	69
12	Implementation	71
	Appendices	73

2.1	Site area	10
2.2	Site conditions	12
4.1	Distribution of student residences by type and zone	18
4.2	Distribution of student residences by Institution and zone	20
4.3	Bar charts of trips made	21
5.1	Proposed road system and car park locations in the 1970's	26
6.1	Major elements of land use	30
6.2	Distribution of student housing on the site	32
6.3	Service road network and car parking areas	34
6.4	Pedestrian network	35
6.5	Plan at October 1965	37
6.6	Plan at October 1968	38
6.7	Plan at October 1972	39
6.8	Plan at circa 1984	40
7.1	Location of Precinct Centre and distribution of sub-centres	42
7.2	Plan of Precinct Centre and surrounding developments in mid 1970's	44
8.1	University area, 1984	48
8.2	Distribution of laboratories and workshops at the University and Institute	50
8.3	Distribution of classrooms and lecture rooms at the University and Institute	51
8.4	Use of the Students Union	53
9.1	Graph of growth of student members at the Institute	57
9.2	Institute area, 1984	56
9.3	Area B proposals	59
9.4	Student Quarter, south-facing housing	60
9.5	Student Quarter, indoor sports centre and housing	62
10.1	City colleges area, 1984	66



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**Planning Consultants**      Hugh Wilson & Lewis Womersley have been advised on traffic and highway matters by Colin Buchanan and Partners in association with Jamieson & Mackay.

# 1 Introduction

**1.1** We were appointed at the end of 1963 by the Joint Committee representing the Manchester City Council, the University, the College (now Institute) of Science and Technology and the United Manchester Hospitals to prepare an overall plan for the development of the Manchester Education Precinct. The work was seen as falling into three stages:

- i. an immediate programme of work to assess the existing position including projects at the drawing board stage
- ii. the preparation of an overall plan laying down the main framework and principles for the development of the Precinct
- iii. a study in depth of various parts of the site within the main framework.

**1.2** The first stage was covered by the presentation of the Interim Report to the Joint Committee in October, 1964. This Report set out certain basic planning principles which we considered should guide our thinking about the Manchester Education Precinct. It included an account of our survey work to date and the development of our brief in building terms and it proposed a draft plan for the area. This scheme, in three dimensional form, provided a suggested basis for the siting of the various buildings and for the solution of the main communications problems.

**1.3** To enable further progress to be made, the Joint Committee were asked to take decisions on four points:

- i. to agree the form of the main road network in the area of the Precinct and in particular the future role of Oxford Road, both in the City network and in the Precinct plan
- ii. to adopt the principle of maximum separation of pedestrians from vehicular traffic throughout the site and to achieve this by raising pedestrian movement to a level above the traffic in those areas where new buildings are to be erected in the vicinity of traffic roads
- iii. to agree that residential accommodation should be provided in the Precinct site rather than elsewhere
- iv. to agree standards of car parking provision to be made throughout the area.

**1.4** The Joint Committee received the Interim Report sympathetically and forwarded it for official comment to the four constituent bodies; their reactions were received at the meeting of the Joint Committee on 2nd July, 1965 and have been taken into account in developing our present proposals.

**1.5** Apart from providing a context for taking decisions on urgent building projects (such as the Mathematics Department and the Departments of Architecture and Town Planning at the University, the Business School and the Northern College of Music) the Interim Report has also proved to be useful in producing comment and criticism from individuals concerned with the Precinct institutions and in stimulating discussion on the many issues involved in such a complex area. The detailed points raised in this way have also been dealt with in our present proposals.

**1.6** Official action has been taken on many aspects of the Interim Report proposals. Consultations have begun between Manchester Corporation and the educational bodies in the Precinct on indoor sports provision, libraries and central power and heating plant. The University and Institute of Science and Technology are to set up a committee to consider all aspects of car parking including the question of charging. The City Council has agreed to rehouse those tenants of houses on land required by the Hospitals and also on land scheduled for University and Institute development north of Bridgeford Street and Wilton Street. The University, with the agreement of the Joint Committee, has commissioned a feasibility study into the proposal for a new shopping centre at the junction of Booth Street and Oxford Road, the construction of which

would enable the clearance of key sites to proceed more smoothly. The recommendation made in the Interim Report, that the site of the B.B.C. building should be exchanged for one further north at the junction of Oxford Road and Charles Street, has been adopted and joint consultation with the B.B.C. architects and the City is in progress over questions of access.

**1.7** The Roman Catholic Church of St. Augustine on Grosvenor Square has now been demolished and a new and bigger church, together with a new Deanery and hall, is being built to replace it on an enlarged site. The acquisition of the site for the Anglican Church on Grosvenor Square, recommended in the Interim Report, has proved to be too difficult administratively and this site is now being purchased by the City for its Adult Education College. A new site, within the general University area, has been selected for the Anglican and Methodist Churches and Ecumenical Chaplaincy.

**1.8** We have continued our work on the second stage of the project, including the preparation of an overall plan and we now submit our Report.

**1.9** We have collected a very considerable amount of information on the existing conditions in the area, including the recording of plans of all the existing buildings at the University and the Institute, the mapping of existing land uses, all utility services and the plotting of the geological fault which traverses the site. Studies have been carried out on traffic movements in the Precinct, staff travel, student vehicle ownership, mode and times of travel, patterns of expenditure and use of libraries, students unions, dining facilities and academic space.

**1.10** The survey of existing space at the University and the Institute has been helped by the University Grants Committee's request for details of all buildings estimated to be in use in 1967. The effects of traffic noise on buildings in the Precinct area have been studied with the help of the University and Institute.

**1.11** An analysis of the economic basis of shopping provision in the Precinct has been made and a detailed design study of the shopping centre, with an assessment of costs, has been carried out.

**1.12** Investigations have been undertaken into the design problems of most types of University accommodation, more detailed proposals have been made for the Student Quarter and the principles of development for Area B at the Institute have been presented.

**1.13** The essential parts of all this information are described in this Report and together with a fuller understanding of the land ownership problems and the time scale involved, this procedure has enabled a more precise definition to be made of the pattern of development of the Precinct.

**1.14** The task of preparing these proposals has been undertaken in the context of a series of planning principles which we believe to be important in the planning process for a major group of educational buildings. These were set out in the Interim Report and are summarised here:

- i. planning must have regard to a high level of car ownership and usage. At the same time there must be the maximum segregation of pedestrians and vehicles and a separate footpath system. This is very important in a University, which should be a meeting place
- ii. a reasonable amount of open space should be created in the Precinct
- iii. there should be maximum flexibility in the use of buildings and sites
- iv. a satisfactory social organisation should be achieved with the maximum use of facilities throughout the day
- v. there should be integration with City development



vi. the Precinct should be considered as an environmental area from which extraneous traffic is removed  
vii. the development should have a coherent structure with the correct relationship between buildings and landscape.

**1.15** The planning proposals are presented on three maps, to show the situation expected in about 1968, 1972 and 1984 when it is possible that the Precinct will have been fully developed. It must be stressed, however, that even the proposals on the 1968 and 1972 maps depend on the rate of capital investment and on the priorities to be given to the various projects. This reinforces the view that it is not possible to produce a finite master plan for a large area which is as susceptible to growth and change as an educational complex. Instead the plan must lay down a framework to guide development which is capable of taking account of changing needs and priorities.

**1.16** The subsequent process of detailed study of various parts of the site within the overall framework forms the third stage of the project. This has already started in relation to the building projects which are now being designed: the Business School, the Mathematics Department, the Departments of Architecture and Town Planning, Computer Science, the Medical School, the Northern College of Music, the College of Adult Education, student residential accommodation for both the City Colleges and the Institute, the Shopping Centre, the Anglican and Methodist Churches and Ecumenical Chaplaincy.

**1.17** This is a continuing process which must be followed throughout the development of the Precinct and is an essential link between the framework plan and the individual building designs. It involves co-ordination of the efforts of all those working within the Precinct. The design of every element will have its impact on the others. Nothing can be ignored, from the consideration of a major building mass or road junction to the detail of the smallest element of street furniture. The visual sense of the Precinct will depend on the co-ordination of all the parts.

**1.18** The idea of the Precinct containing nearly all the Higher Education facilities of Manchester and some of those of the surrounding area is of a special significance, not only in planning terms but also in the light of the Government's binary policy in education. Here there should be a real opportunity to achieve a comprehensive approach to Higher Education to meet the needs of a wide range of students with each contributing to the whole and in turn being enriched by the broad spectrum of studies and activities to be found there. The concept of creating a Precinct, and this must be made possible in environmental as well as educational terms, is a bold one and a site so close to the City centre lends itself to the possibility of a significant fusion of town and gown. Yet, whilst this is the exciting rich potential, it is also perhaps the greatest danger of the project. Because of the inevitable pressures on space and concern with day to day problems of implementation the big chance could be missed. The Joint Committee have the vital task here of keeping the vision of the Manchester Education Precinct bright and clear. The effect of every additional expansion project on the ultimate environment must be clearly analysed and realistically determined.

**1.19** The Precinct could become either a meeting ground for town and gown or a private intellectual enclave. If the latter should happen, it would be a tragedy for the City, the University and the Institute. We see this as a fundamental problem and have tried to keep in mind the need to achieve a degree of City renewal in its widest terms. The Brief is a complex one, comprising a detailed

set of requirements and at the same time being very general and wide ranging in its implications. Planning is a comprehensive activity and never more so than in the case of this vital and important example of urban renewal in a great City.

**1.20** To ensure that the Precinct is not just an employment centre for 40,000 people and also that it is integrated with the City, we would stress the importance of measures such as the following:

- i. provision of the maximum possible amount of housing for the students and staff and perhaps some other people on the site
- ii. encouragement to students to find lodgings in the Brunswick and Hulme housing areas, on either side of the Precinct. This would ease the problem of the Transport Department in bringing students to the site and would materially assist the solution of the parking and vehicular access problems in the Precinct. Feet are easier to accommodate than cars and buses
- iii. provision of a shopping centre to serve the Precinct and the adjoining areas
- iv. provision of professional and other offices and public houses and restaurants
- v. a policy to allow the use of accommodation in the Precinct such as meeting rooms, halls and theatres for City purposes
- vi. encouragement to students to use City facilities
- vii. the use of accommodation on the site for conference purposes. There is a growing demand for this and Manchester could become an ideal conference centre.

**1.21** Certainly every opportunity should be taken to achieve integration and co-operation in deeds as well as in words.

**1.22** Whilst this Report inevitably deals at some length with the problems of expanding an existing University within the context of the large-scale redevelopment of a major city, the potential benefits in social and economic terms in the case of the Precinct are manifest.

**1.23** First there is the accepted need radically to improve the urban environment of the North West in the interest of the country as a whole. This is made clear in such reports as the National Plan, the North West Study and the Environmental Report of the North West Economic Planning Council. Manchester is at the core of the North West Region.

**1.24** The social, physical and economic needs of the City of Manchester and of its University are essentially complementary. To improve one automatically improves the other. To improve both in such an integrated manner as in the Precinct concept should enable the best possible return for effort to be realised.

**1.25** A very substantial amount of capital expenditure upon City, University and Institute buildings and upon housing redevelopment and major highways has recently been invested in the area of the Precinct itself and in its immediate surroundings. To continue this investment policy in this area on the basis of a large and comprehensive town planning concept should ensure that the best value for money is achieved, by providing an extensive stimulating environment for the generations of people who will be living, studying and working there. To spend money on new individual buildings, however finely conceived, scattered about a city may certainly create local improvements, but where a concentration of capital outlay is possible, as in the Precinct, a whole segment of the city can be renewed and made efficient and pleasing. It becomes something significant and worthwhile for one generation to hand on to succeeding ones.

**1.26** The advantages to students and staff (and their wives) of being close to the city centre, with its fine shops, wide range of restaurants, hotels, cinemas, theatres and concert hall, hardly needs emphasis but it should nevertheless be recorded as one of the important factors which attract the best quality of staff and students to work and study here. What is perhaps rather less obvious is the advantage to the townspeople to have a large educational centre on the doorstep of their central area. Already such buildings as the University's Roscoe Building and the Institute's Renold Building provide for a series of lectures, conferences, films and concerts to a wide range of specialists outside the purely academic field and to the public as a whole. The University Theatre also has a wide public appeal. This will be intensified with the completion of the new Northern College of Music at the heart of the Precinct and the range of specialist and other shops to be incorporated in the Precinct Centre adjacent to it. But perhaps the most fundamental factor in bringing together town and gown lies in the physical integration of the City Education Committee's buildings\* with those of the University and Institute. Amongst these city buildings are the Regional College of Art, the John Dalton College of Technology and the Adult Education College. This happy relationship, together with the opportunities it affords for sharing residential, dining and Union facilities, and in particular, the sharing of a major Indoor Sports Centre which is currently proposed, gives obvious and unprecedented social advantages.

**1.27** On grounds of cost alone this sharing of facilities has a far-reaching potential. The avoidance of duplicating, or triplicating, common user accommodation which might otherwise occur on various individual sites scattered about the city gives clear financial gain. Underlying the multi-level basis of the physical plan is the need to design for fairly high densities on expensive land and at the same time provide both for adequate vehicular access and for peace and quiet for study and discussion. The framework of the plan as proposed, supplemented by forward programming, will lend itself to large-scale continuous building forms which can lead to economies in capital cost, building labour and land use. An example of this is in our basic proposals for Area B of the Institute, where this form of building lends itself to a higher density of development without sacrifice of amenity and with benefits to efficiency. The building form proposed for a substantial part of the residential accommodation, namely that of 5-storey continuous blocks with pedestrian access at ground and second floor levels, is also one which is fundamentally cheap in structure and layout and economic in density. It is one which, we hope, will enable good standards of internal space and finishes to be maintained.

**1.28** The long term opportunities for savings in cost by such means as using standard building components, modular coordination, industrialised building processes and the provision of common services, such as heating, to large areas of the Precinct, for all of which the plan form proposed provides opportunities, are the subject of continuing combined studies.

**1.29** Inasmuch as the "one-off" individual building will be the exception within the Precinct Plan rather than the rule, basic savings in overall development cost must assuredly be achieved by this comprehensive approach to the provision for Higher Education.

**1.30** From our impressions gained over the past two years, we are more certain than ever that the Manchester Education Precinct represents one of the great challenges of urban development at this time. The opportunities that exist are perhaps unequalled in any city in Europe; here

there can be created a fine group of buildings and inter-related spaces worthy of a great educational centre in a great city. There could also emerge a relationship between town and gown which could be unique in its scope and influence.

**1.31** In presenting this Report we wish to record our thanks to the many people who have helped in the preparation of these proposals by giving information and advice. In particular we gratefully acknowledge the very considerable help and encouragement we have received from the Members of the Joint Committee and from the Officers of the four constituent bodies.

\* generally referred to as City Colleges in this Report.



## 2 The site

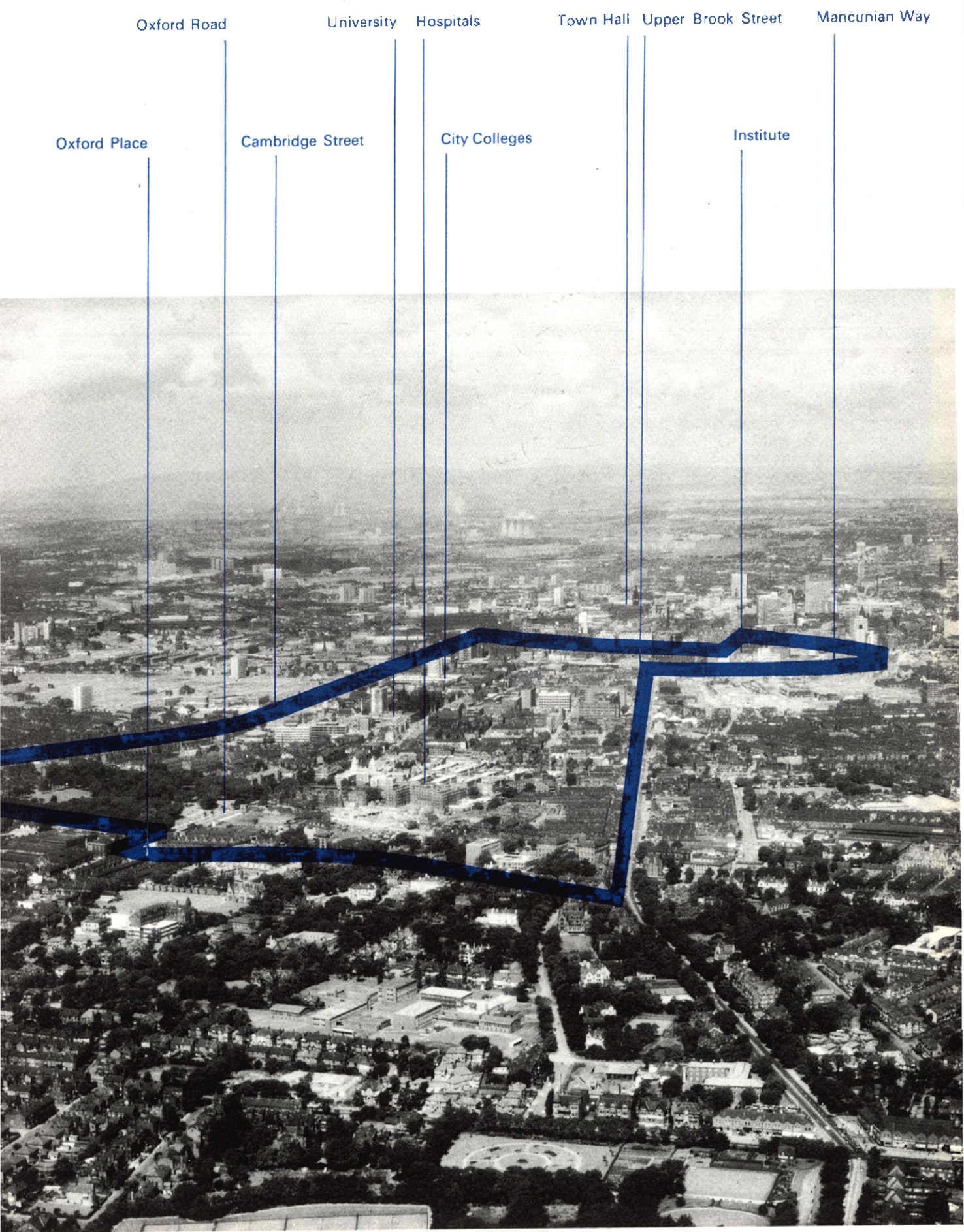
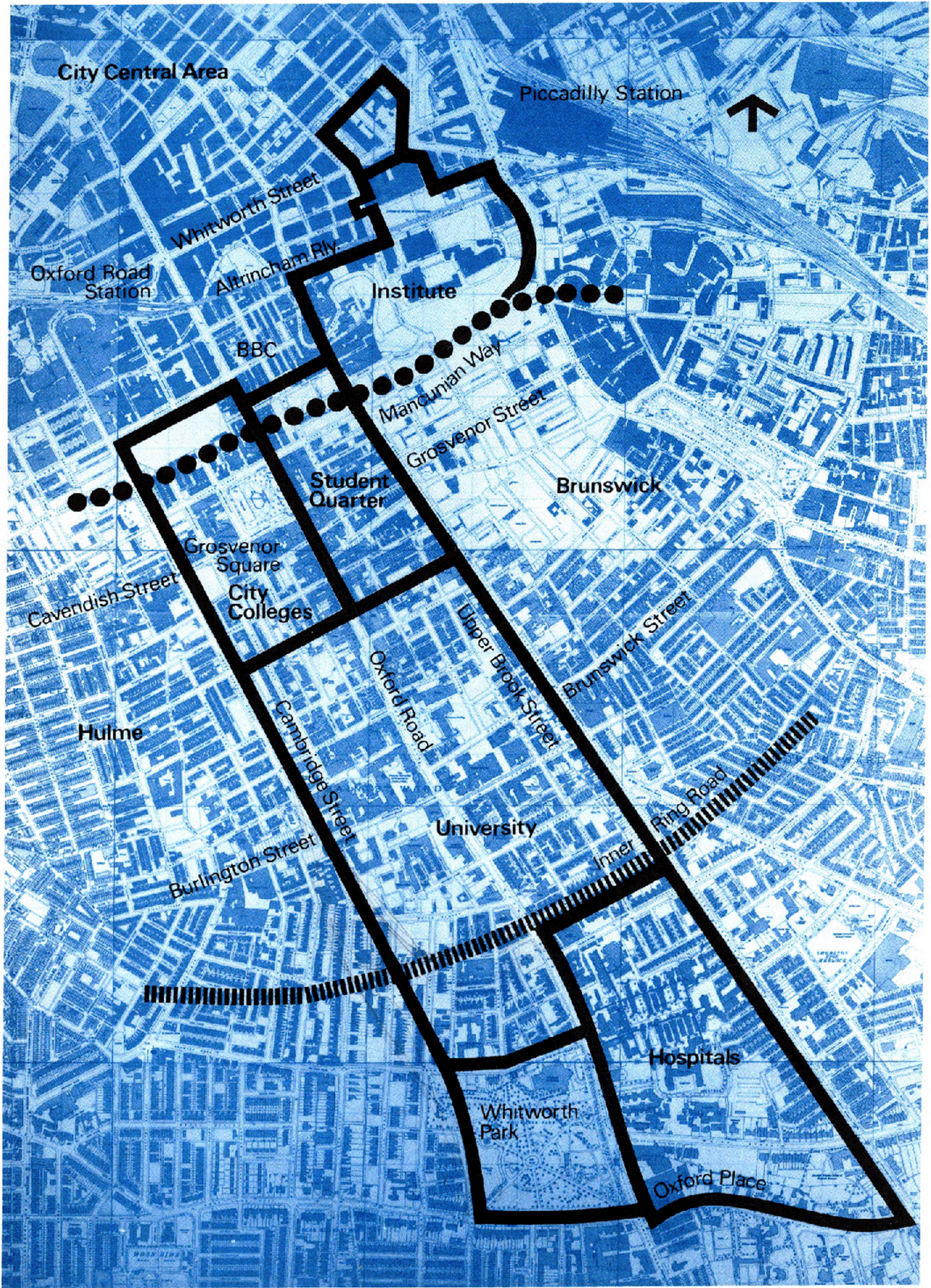




Figure 2.1 Site area

10 400 800 1200 1600  
scale in feet





**2.1** The Precinct is about one-third of a mile wide and one and a quarter miles long, comprising some 280 acres (Figure 2.1). Oxford Road passes down the middle and it is bounded by Upper Brook Street/Princess Street to the east and Cambridge Street/Lloyd Street\* to the west with an extension to London Road and Whitworth Street at the north east corner to include the existing sites of the Institute. At the northern end the Precinct extends to the central area of Manchester and at the southern end to Oxford Place and Whitworth Park.

**2.2** Traffic is considerable on the north–south routes and particularly on Oxford Road which is used by public transport and by local and through traffic at such a density as to effectively divide the Precinct in two. East–west traffic traverses the site at a number of points, in particular, Grosvenor Street/Cavendish Street and Burlington Street/Brunswick Street, the latter intersecting frequent University pedestrian movements. All these traffic routes represent considerable obstacles to the realisation of the Precinct concept.

**2.3** Link road 17/7, now called Mancunian Way, is being built across the site immediately north of Grosvenor Square and to the south of Institute Area A. This road is raised on columns some 20 ft. above present ground level across the site and there will be grade separated interchanges with Upper Brook Street and Cambridge Street. It is proposed in due course to widen and improve Upper Brook Street and it is envisaged in the Manchester Development Plan that Cambridge Street will be improved; a further east–west route (the Inner Ring Road) is planned approximately on the line of Grafton Street, to the north of the Hospitals site.

**2.4** The overhead railway (Altrincham line) passes the northern end of the Precinct to the south of the Main Building at the Institute.

**2.5** Apart from the University and Institute buildings to be retained and the buildings of the Regional College of Art and the John Dalton College of Technology, the existing land use in the area is mainly housing, in two storey terraces, with local service industries and shops. Most of the shops occur along Oxford Road and Cavendish Street but with the progressive clearance of the older housing, the shopping has declined except in the case of those businesses which rely largely upon the University for their trade. Much of the property is in poor condition.

**2.6** To the north of the Precinct lies the city centre with its main line and suburban railway stations, its regional shopping and entertainment centres. To the south is the residential and recreational hinterland providing most of the lodgings and sites for students' halls of residence. To the east and west major areas of urban housing at Brunswick and Hulme are in process of clearance and reconstruction by the City Corporation.

**2.7** The land is generally flat with a slight dip towards the northern end where the River Medlock meanders from east to west across the site, for the most part in culvert (Figure 2.2). Another stream, the Cornbrook, crosses the site from east to west, north of the existing University buildings. This stream too is in culvert, some sections of which will require to be renewed and the alignment adjusted at the same time.

**2.8** A large gas main crosses the site along Grosvenor Street and Boundary Street West. Two major city sewers cross the site on Cavendish Street and Rosamond Street at great depth and must not be disturbed. The local sewer system centres on Oxford Road together with the local mains services.

**2.9** The Precinct generally lies on the Bunter Sandstone with glacial drift deposits overlying the rock to a depth of about 40 ft. at the north and thinning out to a few feet at the University.

**2.10** The West Manchester Fault runs across the site in a north–west and south–east line under the Physics building at the University, crossing Oxford Road at Grosvenor Square. A report prepared by Consulting Engineering Geologists advises that tall buildings should be kept 100 ft. away from the rockhead line on the east side and 25 ft. away on the west, and gives details of ground bearing pressures which might be assumed in various places.

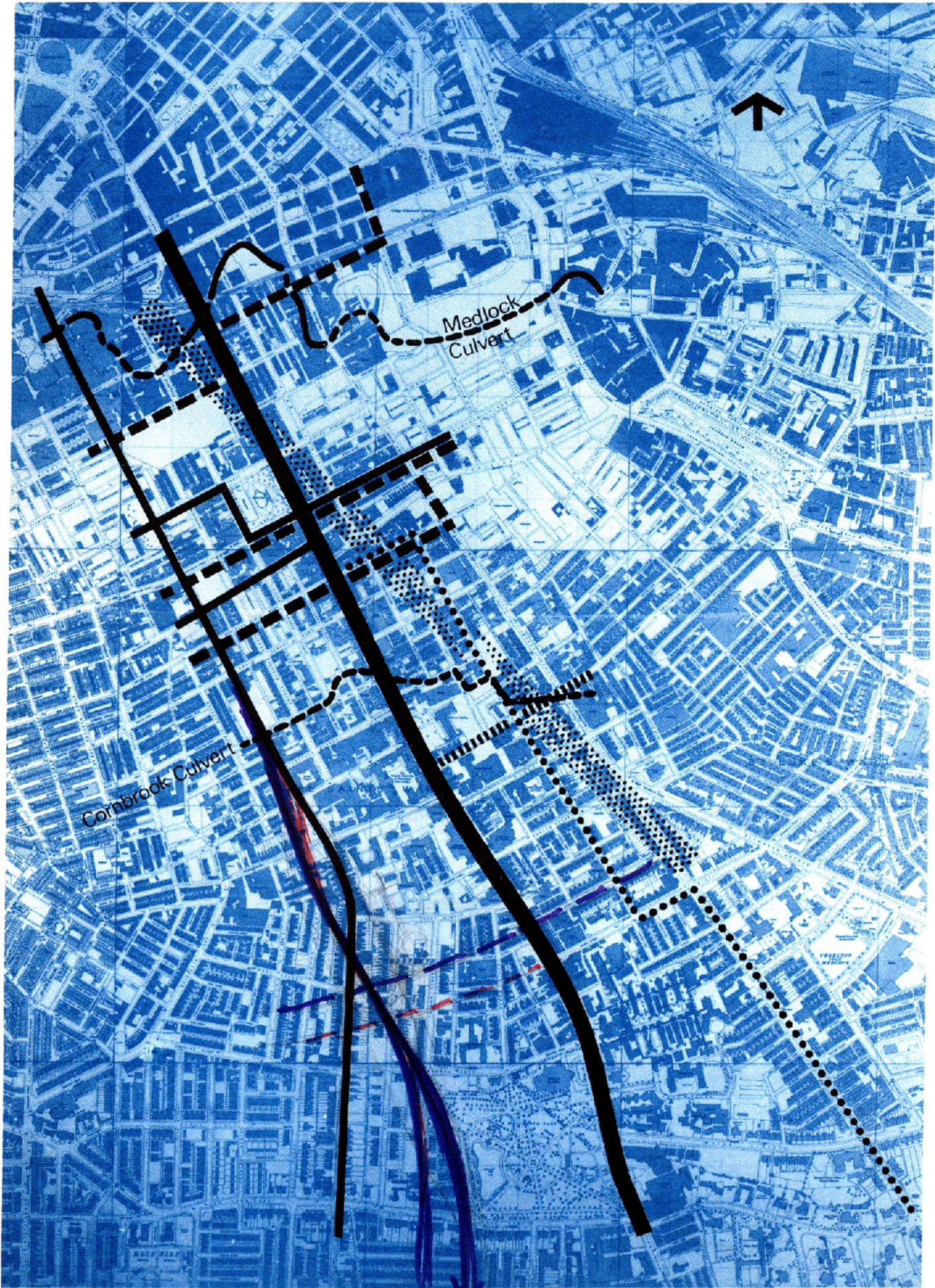
\* generally referred to as Upper Brook Street and Cambridge Street in this Report.



Figure 2.2 Site conditions

0 400 800 1200 1600  
scale in feet

- |                       |        |
|-----------------------|--------|
| West Manchester Fault | water  |
| all services          | gas    |
| electricity           | sewers |









**3.1** Before the planning proposals can be evolved, the Precinct must be placed in its context in Manchester particularly in relation to the overall transportation policies of the City. It is necessary to consider the impact of such a concentration of educational facilities, and this process will involve some calculation of the number of people who will congregate there as well as decisions on problems of accessibility. Calculations of size can only be provisional at this stage, since they must depend to a great extent on circumstances arising from Government policy. Nevertheless it may be useful to consider some of the academic and physical factors which can have a significant influence on the number of student places that can be provided on the site. These factors are dealt with separately later but may be summarised as follows:

- i. the floor area required per student for each category of academic and communal activity
- ii. the density of students per acre in those areas reserved primarily for residential use (e.g. the Student Quarter)
- iii. the ratio of floor space to site area in the various parts of the Precinct (development density)
- iv. accessibility of the site in terms of
  - a. public transport
  - b. road capacities and car parking
- v. the effect on site capacity and accessibility of
  - a. staggering working hours
  - b. increasing residential accommodation on the Precinct and within walking distance of it.

**3.2** An estimate of the capacity of the site in terms of student places is necessary to ensure that while academic space is being planned, provision is also made, in terms of site area and appropriate location, for all the other kinds of space required: unions, refectories and kitchens, libraries and reading rooms, administration offices, open space, residential buildings, vehicular and pedestrian circulation and car parking. All these uses must be kept in some reasonable balance at all stages of the development of the Precinct Plan.

**3.3** The estimate cannot be precise as there are so many variables in the calculation. First there is the ratio between the numbers of students in various faculties. Although difficult to forecast, the relative rates of growth of the Arts and Science Faculties are important in the assessment of space required for teaching. The Hale Report\* showed that the total weekly hours of teaching vary between 10 for an Arts student and almost 20 for a student of Applied Science. The ratio between the two, therefore, becomes a critical factor in the assessment of total space required for academic work.

**3.4** Similarly the ratio between the numbers of undergraduates and post graduates is important. Whilst there is little difference between the amount of space required by an undergraduate and a post graduate in the Arts Faculty, relative teaching areas required by undergraduates and post graduates in Science can vary from a ratio of 1:1 to a ratio as high as 1:10, the latter being for work in certain engineering departments. It is worth noting that at Manchester, the major increases in student numbers are expected to be in Science with a greater percentage rise in post graduate than in graduate numbers.

**3.5** A further series of variables is introduced from a consideration of the space standards in the existing buildings and the possible changes in their use in the future. This is particularly important in a University such as Manchester where the number of older buildings (some of which are not entirely suitable for their current use) and the well established traditions of research work, tend to result in space standards quite different from those achieved in some new universities.

**3.6** It is possible to arrive at reasonable average figures in terms of space per student in many categories such as the provision of kitchen and refectory space, areas for student communal activity, libraries and reading rooms, general administration and teaching space for lectures, seminars and tutorials. The variable factor can, therefore, be narrowed down to the areas required in laboratories and workshops. These vary considerably between departments and are closely connected with the intensity of use of the spaces. Moreover, if there is to be any move in the future towards the American Universities pattern where, in some instances, 45 hours per week are worked compared with the United Kingdom average of 30 hours, substantial revisions might have to be made to the provision for some faculties.

**3.7** If a proper balance of particular kinds of space is to be achieved it would be advantageous if buildings could be erected allowing for a more flexible use of space. In the plans for the development of Area B, the Institute is already thinking in terms of much larger units of buildings, which, by their continuity, might be expected to accommodate more readily the many changes which will need to be made in the precise use of the space in the future.

**3.8** In the absence of detailed information and foreknowledge of the pattern of student enrolment, the existing situation must provide the basis for overall estimates of site capacity without in any way acknowledging the adequacy or otherwise of current space standards and with the realisation that any or all of the variables mentioned above could cause the ultimate figures to depart from this assessment.

**3.9** The floor space in the University in 1967 is shown in table 3.1 related to an estimated number of 7,785 students by that date. The table also gives an analysis of the floor space per student in the Arts and Science Faculties. Table 3.2 gives similar information for the Institute.

**3.10** As a basis for the Plan which we have prepared for the fully developed Precinct (Figure 6.8) we have generally used a development density figure of 2.0 as being a reasonable relationship of total floor area to total site area over each substantial area of development and redevelopment. We have taken the new Science Area of the University and Area A of the Institute as a measure of existing development densities and have also measured our own design studies as criteria in arriving at a reasonable figure for future development. Further details of these calculations are given in Appendix B.

**3.11** Applying both the existing values of floor space per student and a development density of 2 to areas of new development, possible figures for student places in the University and the Institute are obtained as shown in tables 3.3 and 3.4. These compare favourably with the figures in table 3.5 which indicates the possible working population of the Precinct when fully developed, based on student number targets of the constituent bodies.

\*"University Teaching Methods", the report of the Hale Committee. July, 1964. Table 5.4, Chapter V.



	Floor area sq. ft.	Area per student	
		Arts, etc sq. ft.	Science, etc sq. ft.
Labs and workshops	682,167	15.31	156.40
Other teaching	457,014	48.76	68.15
Administration	52,197	6.70	6.70
Libraries and reading rooms	113,255	14.54	14.54
Student communal	85,280	10.95	10.95
Dining and kitchens	57,723	7.41	7.41
Other areas	44,275	5.68	5.68
Net total	1,491,911	109.35	269.83
Services, circulation etc	754,491	96.91	96.91
Gross total	2,246,402	206.26	366.74

**Table 3.1**  
University buildings in use October 1967 and floor area per student.  
Estimated student numbers: \*Arts 3,795 †Science 3,990. Total 7,785.  
Source: Return to U.G.C. January, 1965.

\*Arts, includes: Faculties of Arts, Law, Music, Economic and Social Studies, Theology and Education.  
†Science includes: Faculties of Science, Medicine and Dentistry.

	Floor area sq. ft.	Area per student sq. ft.
Labs and workshops	546,661	195.24
Other teaching	222,886	79.60
Administration	64,740	23.12
Libraries and reading rooms	24,310	8.68
Student communal	44,819	16.01
Dining and kitchens	48,224	17.22
Other areas	157,867	56.37
Net total	1,109,507	396.24
Services, circulation etc	372,468	133.02
Gross total	1,481,975	529.26

**Table 3.2**  
Institute buildings in use October, 1967 and floor area per student.  
Estimated student numbers: 2,800.  
Source: Return to U.G.C. January, 1965.

\*In attempting to work from the returns of University and Institute accommodation to the University Grants Committee, we have found several respects in which the information entered under the categories identified on the form is open to different interpretations. The information gleaned from it could thus give rise to a distorted picture if it were all taken at face value.  
Such a discrepancy appears in Table 3.2 where the high floor area for the Administration at the Institute includes large scale workshops and the centralised stores.

	Site areas existing and available		Development density	Gross existing and future floor space sq. ft.	Gross area per student sq. ft.	Number of students accommodated
	acres	sq. ft.				
Existing Arts	12.6	548,856	1	548,856*		
Arts Extension North	5.6	243,936	2	487,872		
Arts Extension West of Owens	7.0	304,920	2	609,840		
Owens, Refectory Union†	2.4	104,544		205,863		
Total Arts		1,202,256	1.5	1,852,431	206.26	7,961
Existing Science	13.5	588,060	1.5	881,978†		
Science Extension North	6.9	300,564	2	601,128		
Science Extension South	9.0	392,040	2	784,080		
Owens, Refectory Union†	2.4	104,544		205,863		
Total Science		1,385,208	1.8	2,473,049	366.74	6,177
Totals		2,587,464	1.7	4,325,480		14,138

**Table 3.3**  
Capacity of University area using a development density of 2 for the extension areas.  
Appendix 2 contains further details of this calculation.  
\*the existing Arts area, including the University Library, Arts Building and new extension, and Humanities Building contains 400,600 sq. ft. gross floor space. This represents a development density of 0.7. The area shown in the table includes the estimated

gross floor space of further buildings which can be planned on infill sites within the area.  
††includes Physics, Roscoe, Williamson, Simon, Electrical Engineering and Chemistry only. No further building possible.  
‡these figures represent half the site area and total gross floor space of the Refectory and our proposed extension to it, the Union and those parts of the Owens buildings which it is proposed to retain.

**Table 3.4**  
Capacity of the Institute Areas.

\* existing and/or planned.  
† areas in our outline schemes.  
‡ includes the whole of the new Chemistry Building and its site.

Site owned or being acquired	Site areas		Development density	Gross floor space existing and future	Gross area per student	Number of students accommodated
	acres	sq. ft.				
Main building	3.0	130,680	3.8	502,250*		
(Area C open space)	(3.0)					
Area A‡	16.8	731,808	1.4	1,043,676*		
Area B (excluding multi-storey car park)	6.2	270,072	2.5	666,000†		
Student Quarter (academic space only)	6.6	287,496	2.2	644,760		
Totals	32.6	1,420,056	2.0	2,856,686	529.26	5,400

	Full time students	Part time students	Academic staff	Other staff	Hospital Medical staff	Totals
University	15,000		2,500	3,750		21,250
Institute	5,000		850	1,250		7,100
John Dalton	500	800	300	170		1,770
College of Art	1,000	500	250	100		1,850
College of Music	600		100	20		720
College of Commerce	1,500	600	300	60		2,460
Teacher Training	1,000		110	50		1,160
Adult Education		730	90	40		860
Elizabeth Gaskell	850		90	80		1,020
Hospitals	1,400			1,620	1,950	4,970
Shops, offices, etc				350		350
Totals	26,850	2,630	4,590	7,490	1,950	43,510

**Table 3.5**

Estimate of population of the Precinct when fully developed.

**3.12** At the time when the concept of the Precinct as a whole was first put forward, provisional allocations of land had been made as between the University, the Institute and the City Colleges. Broadly, these locations have been retained in the proposals at present put forward, but there has been a change in that the requirements of the City Colleges have increased considerably and certain projects are now likely to be advanced in the time scale.

**3.13** As a result it is likely that the total needs of the three bodies will exceed the amount of land available in the Precinct. It is our view, therefore, that the Precinct will require extension and that this must take place to the north towards the city centre because its other boundaries are defined by new housing developments.

**3.14** In general it is suggested that the additional needs of the City Colleges will have to be met in the area north of John Dalton College of Technology, but before any extensions to the Precinct are made the existing provisional allocations of land between the three bodies may require some modification as more becomes known about the timing of specific projects and the availability of land.

**3.15** In the case of the United Manchester Hospitals the problem is simpler in that the area for their development is more precisely defined.

**3.16** In considering the capacity of the site it is also necessary to have regard to other factors which may affect the use of the site. The Precinct must be considered not just as a great educational centre but also as a vast employment area with an eventual working population of over 42,000. This brings with it all the problems of the journey to work, of provision for vehicles on the site and the related effects of the road network.

**3.17** In the following Chapters these aspects are considered in some detail and we recommend that a number of steps be taken to help the situation:

- i. to introduce some staggering of hours in order to avoid coinciding with the city centre peak travel. This would make any extra trips by public transport very attractive to the Transport Department and would ease traffic conditions on the road network
- ii. serious consideration should be given to the possibility of speeding up the rate of provision of student places in halls of residence or hostels, preferably on the Precinct, as this would cut down the number of trips generated. This is important in relation to students at the City Colleges as well as those at the University and the Institute
- iii. the City Council should be urged to encourage tenants living within easy reach of the Precinct to provide lodgings for students in their houses
- iv. provision should be made for car parking on the Precinct of a reasonable standard commensurate with the capacity of the Manchester road network.



#### 4 Access to the site and car parking





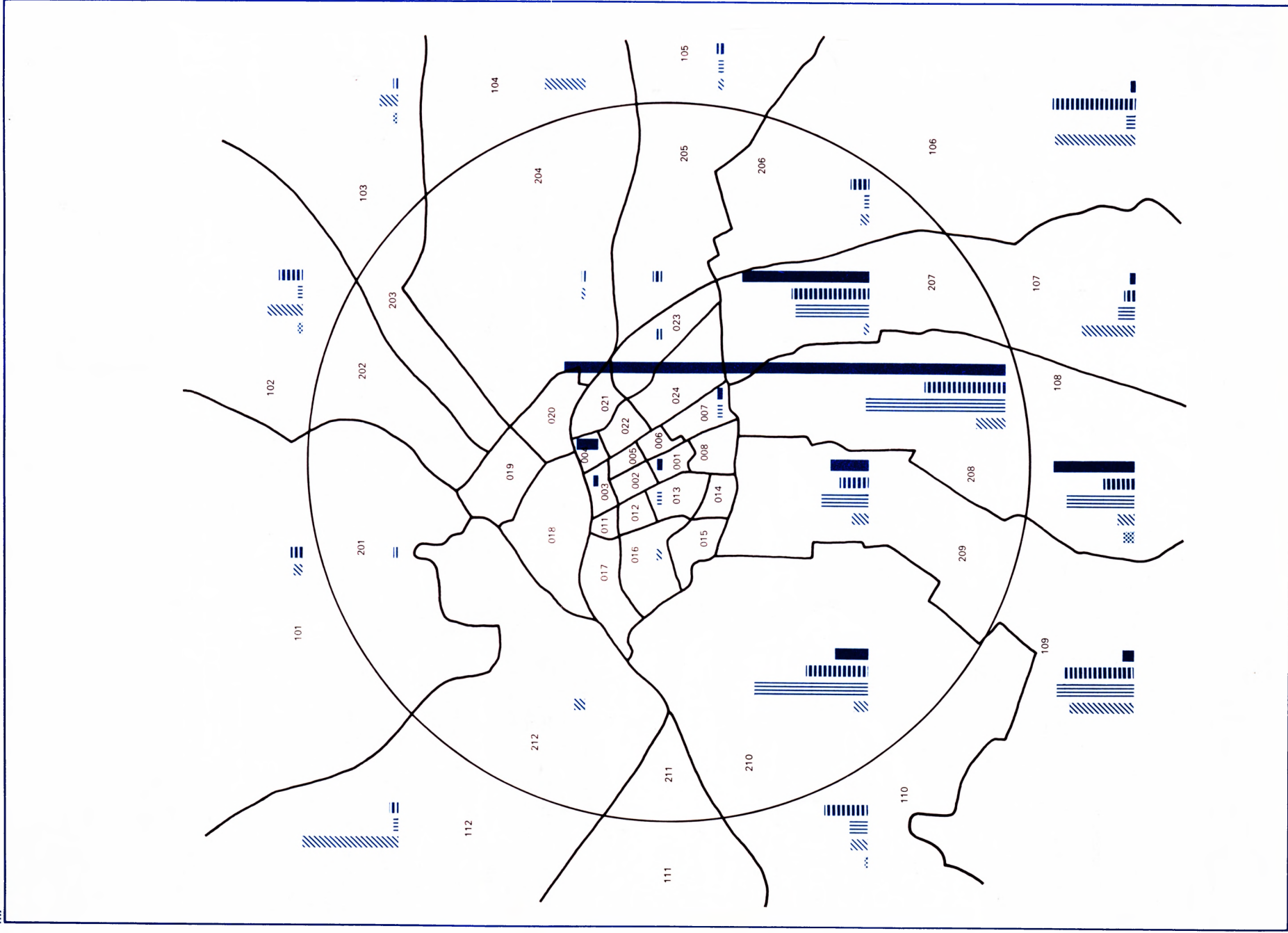
Figure 4.1 Distribution of student residences by type and zone



unspecified lodgings

home hall

flat



The Present Situation

4.1 A survey of student travel, carried out during a week in January, 1965, indicated that the mode of travel of those who made a trip to the Precinct was as follows:

Mode of Travel	% Total Students
Car drivers	10
Car passengers	6
Bus	50
Train	7
Motor Cycle	4
Cycle	3
On foot	10
	90%

In addition approximately 10% of students did not attend on the average day.

4.2 The pattern of travel to the Precinct exhibits a marked peak hour between 8.30 and 9.30 a.m. which overlaps the city centre peak travel period, with a few arrivals continuing throughout the morning. The homeward journey is spread out over many hours, beginning in the early afternoon and continuing until quite late at night.

4.3 Taken overall, the peak hour arrivals represent some 84% of the total student enrolment. The pattern of arrival varies in different parts of the Precinct representing only 67% of the University arrivals at peak hour compared with 96% at the Institute.

4.4 Including academic and other staff, the pattern of daily trips to the Precinct in 1965 was as follows:

Mode of travel	No. of trips	% of trips
Car driver	2,670	16
Car passenger	950	6
Public transport	10,460	62
Motor Cycle	550	3
Cycle and on foot	2,170	13
	16,800	100%

4.5 At the moment little restraint is placed on the use of private cars except at the Institute which is significantly nearer to the city centre and where the first and second year students are discouraged from bringing vehicles into the area. From these figures, it seems there is at present a demand for about 2,500 car park places for long term parking by the regular users of the educational institutions in the Precinct. These are provided mainly by some organised car parks at the University, the Institute and at the John Dalton College together with extensive kerbside parking at the University.

4.6 Figure 4.1 shows the present distribution of student residences of various types and Figure 4.2 shows the distribution according to the institution attended. It can be seen that there is a strong concentration in the southerly quarter of the city mostly in areas of larger houses in private ownership, where public transport connections with the Precinct are good. These, the traditional areas for University and Institute lodgings, are now rapidly becoming saturated under the increasing pressure of growing student numbers and by the competing demands for accommodation by the City Colleges and more recently, the University of Salford. Large areas of Corporation housing reasonably close to the University could provide lodgings for students and more tenants might be persuaded to provide accommodation. Areas of suitable property in other parts, such as Broughton Park, might develop as lodgings if there were more direct public transport links with the Precinct.

4.7 This relationship between residence and travel lies at the heart of the growing problem of access to the Precinct.

By 1972, the University expects to have 8,800 students and the Institute will probably have 3,400. Including the development of the City Colleges, the population working in the Precinct will give rise to 25,000 trips inward in the morning. Without restraint of any sort on car parking in the Precinct, there would, by that date, be a demand for 4,800 places on the basis that only 80% of the car drivers could be expected to be on the site at any one time. Alternatively if no more car parking is provided than there is at present, public transport will be required to carry 18,750 trips to the Precinct – an increase of more than 75%. The increase by 1984, when the development of the Precinct could be completed, could be to 24,000 trips, 128% extra.

Public Transport

4.8 It is clear that public transport must play an ever increasing part in bringing people to the Precinct. But whilst the Transport Department is confident that it will have enough vehicles to be able to supply the demand by 1972, the difficulties under which it will be operating must not be underestimated. During the next few years, there will be increasing pressure on the road network generally, but in particular on the roads near the city centre, such as those which bound the Precinct. Competition for the use of this road space will be severe. The greater number of cars which will be using the roads will be making it ever more difficult for the public transport system in Manchester to function efficiently. The new lodgings areas which must be found will tend to be much further from the Precinct, much less densely developed and less concentrated around convenient bus routes.

4.9 The railways could carry many more students especially if concessionary rates were available to them. Oxford Road Station adjoins the Precinct and Piccadilly Station is close.

4.10 A feasibility study is being undertaken for a new rapid transit system for Manchester commencing with a route linking the airport with the city centre and extending to the northern areas of the city. This is likely to pass close to the Precinct and could in the longer term offer a solution to this problem of accessibility providing it linked the Precinct with parts of the conurbation which could provide new areas of lodgings.

4.11 It will be several years before any such system could be in operation. Meanwhile there is no doubt that the position regarding public transport could be eased considerably by the introduction of staggered hours for starting in the morning to avoid coinciding with the city centre peak period. This would make any extra trips attractive to the Transport Department and would ease traffic conditions on the road networks.

Car Parking

4.12 Some measure of restraint in the use of cars will have to be in operation by 1967 and we recommend that a policy of charging for car park space should be introduced by this time, to coincide with the establishment of proper car park areas. This will have an initial restraining influence upon car use and will serve to give a measure of the actual car parking demand in the area. This policy would be frustrated if indiscriminate car parking were to take place in the adjacent housing areas.

4.13 As soon as possible a clear definition should be made throughout the Precinct of the future land use pattern. This will include the establishment of the long term service road network in the area and the major routes in and out of the Precinct from the perimeter roads, together with the laying out of proper car park areas in zones which will be reserved for this use in the long term also. The capacity

Figure 4.2    Distribution of student residences by institution and zone

College of Commerce

John Dalton College

Elizabeth Gaskell

College of Art

Northern School of Music

Manchester Royal College of Music

Institute post-graduates

Institute under-graduates

University post-graduates

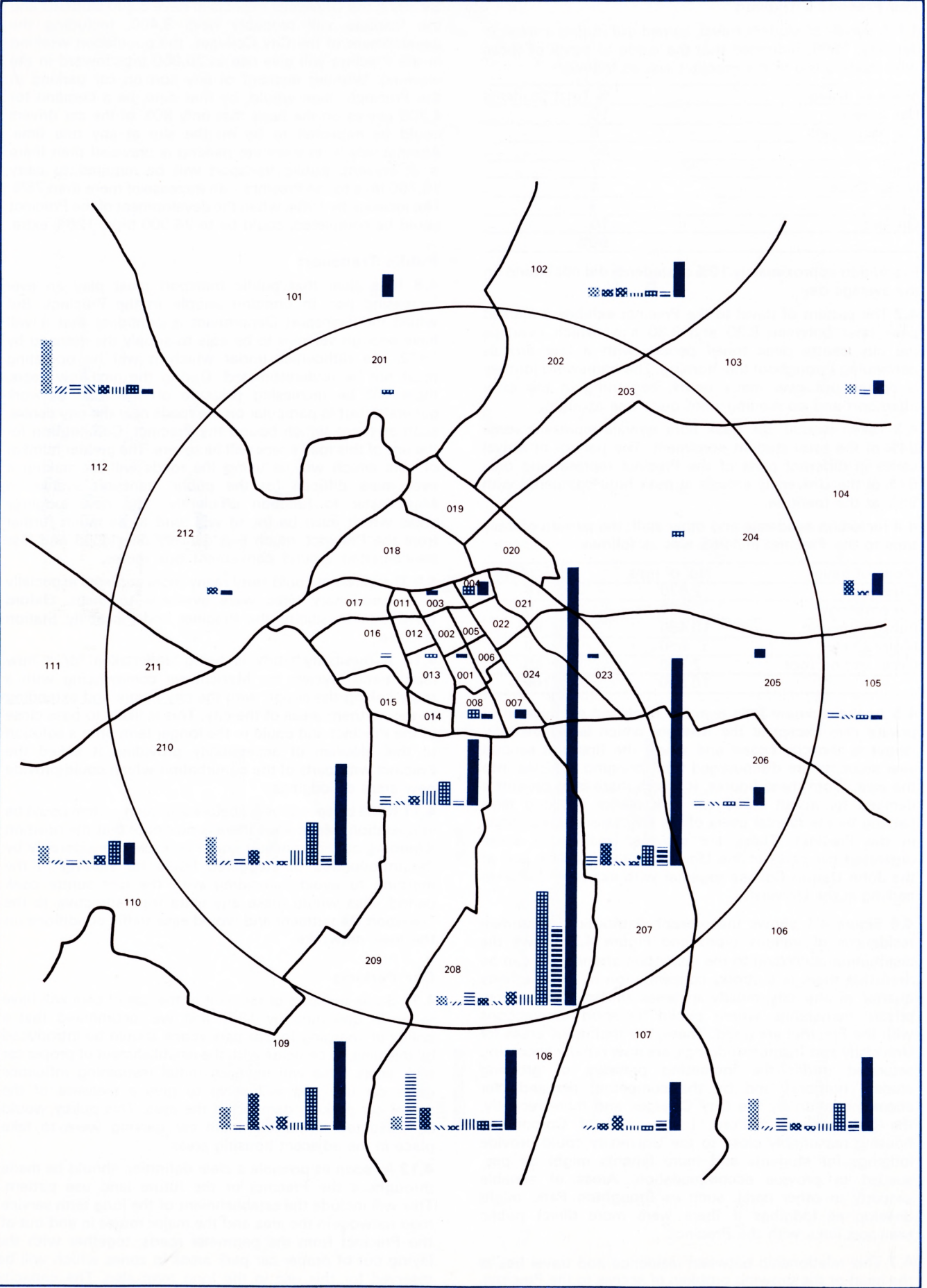
University under-graduates

number of residences

200

100

0





of these areas should be of the order of 2,500 and if a policy of progressive development of 5-storey car parks on the same land is adopted, these sites should have a capacity sufficient to cope with the car parking problem at all stages in the development of the Precinct.

4.14 If car parking provision was to be made to meet the demand by 1972 the pattern of trips to the Precinct would be:

Mode of travel	No. of trips	% of trips
Car driver	6,000	24
Car passenger	2,900	12
Public transport	13,150	53
Motor cycle	750	3
Cycle and on foot	2,200	8
	25,000	100%

This would entail the construction of 3,000 car park places in multi-storey form in addition to the 1,800 surface places which would remain. If working hours were to be staggered as suggested, it is estimated there would be road capacity for this number of private cars on the perimeter radials. The car park areas suggested, however, would have an ultimate capacity for about 10,000 cars, but access to these car spaces would depend on further improvement of the radial roads to increase carrying capacity.

4.15 Even with such a large investment in car park construction, the increased load of trips on public transport would by 1972 be 25% in excess of 1965, rising by 1984 to 83% over 1965 numbers. It can be seen, therefore, that some form of rapid transit system is very desirable to bring people to the Precinct.

4.16 But serious consideration should be given to the possibility of speeding up the rate of provision of student places in halls of residence or hostels on the Precinct as this would cut down the number of trips attracted. This is important for students at the City Colleges as well as for those at the University and the Institute. The City Council should also be urged to encourage their tenants living within walking distance of the Precinct to provide lodgings for students. Quite apart from helping the transport problem this would help to integrate the Precinct with the life of the City.

4.17 Figure 4.3 shows by means of bar charts the effects of alternative policies relating to car parking and the provision of residential accommodation within and around the Precinct on the problem of access.

A. Shows above the horizontal line the inward trips made by various modes in 1965 as shown by survey. Below the line are shown the relative values of people residing on the site and not attending.

B. Shows the pattern of trip mode in 1971/2 if car parking provision is made to keep pace with demand.

C. Shows the effect on demand for public transport if no multi-storey car parks are provided.

D. Shows this demand can be reduced by the provision of more lodgings within walking distance of the Precinct.

E. Shows the trip pattern in 1984 if only a limited amount of car parking is provided (6,000 places). The numbers arriving as car passengers is reduced due to the smaller proportion of students able to bring their cars to the Precinct.

F. Shows the effect in 1984 of the provision of about 5,000 lodging places within walking distance.

G. Shows the position in 1984 if car parking provision keeps pace with demand.

E. F. and G. are based on the assumption that the maximum amount of student housing will have been built in the Precinct.

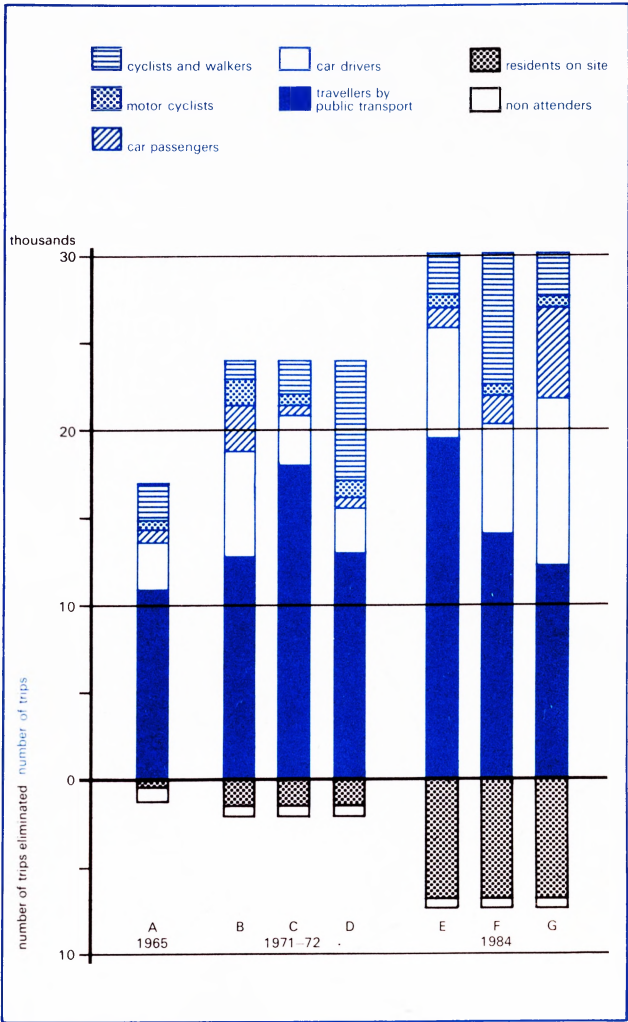


Figure 4.3 Bar charts of trips made









## Initial appraisal

**5.1** The ultimate success of the Precinct will depend to a large degree on the extent to which the environment can be protected from the harmful effects of traffic. Inevitably, this aspect of the overall problem has warranted considerable attention and, in the process, it has been found quite impossible to confine the study simply to questions of access and circulation within the Precinct. There the activities will create a great deal of traffic – just as any other employment centre of such magnitude. The indications are that it will be difficult enough to ensure that this traffic alone does not give rise to unsatisfactory conditions, without the added burden of having to deal with extraneous traffic having no immediate business within the Precinct. But there are, of course, a number of traffic routes traversing the site at the moment so that the most vital questions that arise in this respect are those concerning the future of these routes and whether or not the traffic they carry can be satisfactorily diverted.

**5.2** As a means of giving initial guidance in the planning of the Precinct development, a qualitative assessment was made of the traffic situation as it affected the site. The main conclusion of this first assessment was that the current road proposals for this part of Manchester (resulting from the original S.E.L.N.E.C. study\*) do not provide a satisfactory context in which the Precinct can be developed as an “environmental area”. This is not to suggest that the S.E.L.N.E.C. proposals were in any way misconceived at the time of their formulation. What is suggested is that the subsequent decision to comprehensively redevelop this very large area immediately south of the city centre as a major Education Precinct has radically altered the pattern of land uses to be served by the highway network in this area and that, in consequence, the network merits a review. In addition, it is suggested that recent experience has shown the absolute necessity for linking studies of highway location very much more closely to urban redevelopment studies and to ensure that full regard is paid to environmental standards which are ever in danger of being eroded by traffic.

**5.3** In any case, it is known that a new land use Transportation Study of the conurbation has been commissioned and that a review of the current proposals is in fact contemplated. The results of this study will not be available for about two years. In the meantime, the planning and rebuilding of the Precinct has to continue and it has been necessary to anticipate some of the findings of the transportation study and to suggest certain matters of principle in respect of the development of the Precinct which could well become factors that should be taken into account in reviewing the current highway proposals.

**5.4** The most obvious need that can be anticipated is for a number of high capacity primary routes on radial corridors leading into the heart of the city. The location of these routes will have to be considered very carefully in relation to the long term land use and development proposals. The proposal to extend Princess Parkway (which lies some distance to the west of the Precinct) in a northerly direction has obvious merits. In addition, the comprehensive redevelopment of the Brunswick and Hulme areas on either side of the Precinct, provide an opportunity to upgrade those sections of Cambridge Street and Upper Brook Street which border them, without introducing any serious conflict between traffic and environment. But south of these districts, the position is different, since the extensions of both these routes appear to run through a number of potential environmental areas. These particular routes should, therefore, in the long term, perform the function of district distributors rather than major radials. As such, they

will have to carry a great deal of traffic necessitating an improvement as far as their width and alignment is concerned, a curtailment of the number of junctions with local roads and the removal, as far as possible, of frontage development.

**5.5** The demands for traffic movement on an east–west axis in the vicinity of the Precinct are not so clear. With the general increase in car ownership, there will be an associated increase in cross-city movement. This increase will undoubtedly continue at a greater rate than that of centre-bound movements, simply because of the greater need to restrain the latter. On completion, Mancunian Way will obviously draw off from the existing cross routes a great deal of this transverse movement – but how much? Will it be possible, in fact, eventually to exclude all extraneous traffic from the Precinct, and if so, when can it be achieved and what are the implications for the surrounding routes?

## Traffic Surveys

**5.6** It will not be possible to provide complete answers to these and many other questions relating to highway and transport matters affecting the Precinct until the Transportation Study is completed and the data analysed, and even then the Study may not reveal the more detailed information required for the planning of the Precinct. Some guidance was, therefore, necessary at this stage and a number of local surveys were carried out with the intention of obtaining the minimum of essential data to provide a sound basis for the plan. These were:

- i. a survey of student movements covering their journeys to and from the Precinct and internal movements during the day
- ii. an Origin and Destination Survey of a sample of vehicles passing through the Precinct
- iii. volumetric counts of traffic on internal streets and adjacent highways.

These are described in detail in Appendices A and E.

**5.7** The main purpose of the traffic surveys was to provide the data necessary for ascertaining the effects of certain changes in the road system within the Precinct up to 1972† – changes that are considered to be vital in relation to the restoration and maintenance of reasonable environmental standards within the Precinct as the building development proceeds and the student population grows. There is at the present time a substantial case for the introduction of measures to reduce traffic flows on certain streets – in particular Oxford Road, Brunswick Street and Burlington Street. As discussed later (paras 5.9 and 5.10), there is some scope for an early improvement, but we are mainly concerned here with the changes that can be made and the traffic conditions that will arise after 1967 when the Science area of the University is complete. This will coincide with the completion of some major improvements to the highway network in the vicinity, including the opening of Mancunian Way.

\*“A Highway Plan 1962” prepared by the South-East Lancashire and North-East Cheshire Highway Engineering Committee.

†1972 is the last year of the next U.G.C. quinquennium and the date by which it is estimated that initial building projects will have been completed.

## Existing Road Network

**5.8** The whole scale and function of the existing road network reflect the period of its construction and substantial changes will be required to meet future needs. Generally, the roads are "all purpose" in that they directly serve an admixture of industrial, commercial, residential and educational developments and, at the same time, have to cope with major inter-district and regional traffic flows. This gives rise to a continued series of dangerous conflicts between the moving vehicle and the turning or stationary vehicle, as well as creating extremely dangerous conditions for pedestrians. Our surveys clearly demonstrate that Oxford Road carries a greater volume of traffic in the peak hours than many of the "cross-Precinct" routes carry in 12 hours. The inbound and outbound 12 hour flows at the southern end of Oxford Road show a significant balance in direction but at the northern end of the Precinct, where one-way systems affect traffic circulation, Oxford Road and Princess Street flows have to be jointly analysed to reveal a similar directional balance. The increase in north-bound traffic on Oxford Road at Whitworth Street (approximately 14,000 vehicles per day compared with under 10,000 vehicles per day at Whitworth Park) clearly demonstrates that the one-way system at the northern end of the Precinct has attracted an additional load of traffic alien to Oxford Road. The present 12 hour flow on Oxford Road (approximately 18,000 vehicles) is fairly evenly spread over the hours of the day and as such it represents a completely undesirable intrusion of the vehicle into the daily life of the Precinct.

Similarly, the Brunswick Street/Burlington Street cross-route carrying approximately 7,000 vehicles per day attracts a very large quantity of extraneous traffic through the Precinct.

There is no doubt in our view that these movements on an east-west axis could readily be accommodated on routes further south, with a much less devastating effect on the environment of the Precinct.

## Short-term measures

**5.9** As soon as Mancunian Way is completed, the need for the east-west cross-Precinct routes on Cavendish Street and Brunswick Street/Burlington Street for longer distance movements will be reduced. We recommend that Brunswick Street and Burlington Street should be closed, although part of the latter would be required for service access to the Refectory. Consideration should be given to closing Cavendish Street as soon as the new roads in Hulme 3 have been constructed and the 'bus routes diverted onto Booth Street.

**5.10** Traffic management measures such as the introduction of peak-period clearway regulations, the closing of minor side streets, the banning of most right turns, the linking of signals and so on, could be introduced immediately, thus starting a rolling programme of implementation of the long term plan. The additional capacity thus created on both Upper Brook Street and Cambridge Street would be sufficient to allow a diversion of a significant proportion of traffic out of Oxford Road. The attraction of these peripheral routes could be further enhanced by a combination of new route signposting and a deliberate policy to make journey times on these routes less than along Oxford Road.

## Longer-term measures

**5.11** As explained above, the main objective of our traffic study has been to provide data upon which to base forecasts of the movements from, to and through the Precinct in 1972. From these forecasts it has been possible to ascertain the effects of closing various cross-routes and also of restricting traffic on Oxford Road to vehicles con-

nected with the essential servicing of the premises within the Precinct and to the City bus services.

**5.12** The road system proposed by us for the 1970's is shown in Figure 5.1 together with locations of the major car parks within the Precinct. In these proposals two-way traffic is extended on Upper Brook Street by making Pritchard Street a one-way northbound link to Charles Street. East of Pritchard Street, Charles Street provides a one-way (eastbound) link to Upper Brook Street. Beyond this point, Charles Street could be two-way to Sackville Street. This would free the length of Sackville Street to the south of Charles Street of through traffic. Hence the gyratory system of Cloak Street is replaced by a two-phase signals system at the junction of Charles Street and Upper Brook Street/Princess Street. West of Pritchard Street, Charles Street and Hulme Street are retained as two-way routes serving the adjoining development. This proposal would obviate the temporary connection of Sackville Street to Mancunian Way. It would be of great benefit to the Institute in preventing through traffic from entering what should be a quiet area and in improving pedestrian-vehicle segregation.

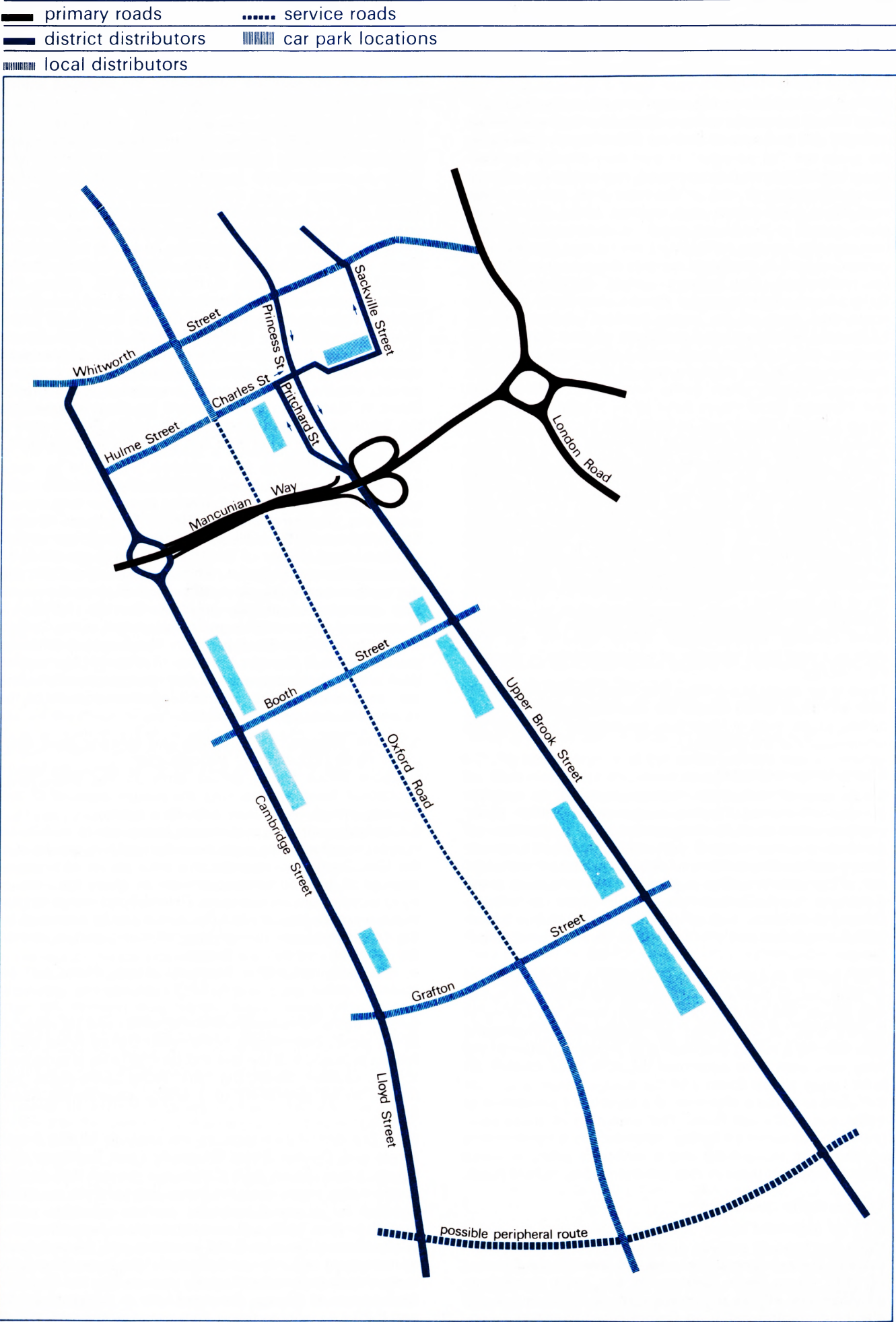
**5.13** In our proposals, Mancunian Way caters for the major east-west movements and minor cross-Precinct movements are accommodated on Booth Street and Grafton Street/Denmark Road, Nelson Street having been closed to allow development of the Hospital site to proceed. An improved Cambridge Street/Whitworth Street junction and the realignment of the northern section of Lloyd Street are also incorporated in our proposals for the 1970's. A channelised system with signals is proposed at the Grafton Street/Upper Brook Street junction. The proposals envisage the extension of Princess Parkway to link with Mancunian Way, although it is appreciated that the capacity of this link will be severely restricted, until the redevelopment of the Hulme area has been completed.

**5.14** The projected (1972) daily and morning peak hour traffic flows (Appendix E) indicate that:

- i. Upper Brook Street would carry, in the peak hour, directional flows approaching the design capacity of the recently introduced 5-lane tidal flow system.
- ii. Cambridge Street would require improvement to 4-lanes in order to cater for the peak-hour demand. We would urge the City Council to consider this as a matter of urgency because of its importance to the quality of the Precinct.
- iii. in terms of private transport, Oxford Road would appear to have excess capacity but this is likely to be absorbed by the considerable amount of bus traffic required to service the Precinct and the city centre.
- iv. the estimated traffic flows on Booth Street can be accommodated on a single 33 ft. carriageway providing two running lanes and a central lane reserved for right turning traffic. However, additional width will be required at the signal controlled junction with Oxford Road and a system of linked bus lay-bys and turning lanes is proposed.
- v. the Grafton Street/Denmark Road cross-route will require to be developed to a similar capacity to Booth Street.

**5.15** The critical intersections are likely to be the Booth Street and Grafton Street/Denmark Road junctions with Upper Brook Street and Cambridge Street. Although it appears that movements at these intersections could be handled by a signal operated surface junction, traffic growth beyond 1972 will necessitate grade separation. The Grafton Street/Denmark Road junctions with the peripheral routes would be further complicated if the Inner Ring Road is developed on the line currently proposed by the City. The implications of this are discussed later in paragraphs **5.19** and **5.20**.

Figure 5.1 Proposed road system and car park locations 1970's



### The Inner Ring Road

**5.16** In addition to Mancunian Way, the City road proposals include yet another major east–west route across the Precinct – the Inner Ring Road approximately on the line of Grafton Street. At the time of the Interim Report we suggested that this road might not be an absolute necessity on this line.

**5.17** Since then, we have carried out the survey of the traffic which at present affects the Precinct and this has provided a further insight into the whole question. At the moment only slightly over 10,000 vehicles a day pass across the Precinct on east–west routes. Much of this will be diverted onto Mancunian Way when it is opened and even if the remainder is trebled to take account of future growth, it would not in itself justify the construction of a major primary route on the line of the proposed Ring Road.

**5.18** We are aware, of course, that the surveys were necessarily limited in scope and did not provide all the information necessary to ascertain the most suitable pattern and scale of highways in the whole of this southern part of Manchester. There are undoubtedly fairly large quantities of traffic making diagonal and cross movements further to the south of the Precinct and which at present utilise such existing streets as Moss Lane East, Hathersage Road, Dickenson Road and routes further south. Many of these would be attracted to a primary route on the proposed line, but to create this facility would be to deliberately divert extraneous traffic through the heart of an obvious environmental area. Such a course of action could be considered a reasonable one, if there were strong enough traffic reasons for it – but in this case there does not appear to us to be an overriding traffic case and we have felt bound to report in these terms.

**5.19** We are sure that if the proposals could be looked at again in the light of the results of the Transportation Study and the environmental needs of the Precinct and the surrounding areas, together with considerations of local access, then something quite different could emerge. We think that this could involve not just an alternative line for the Ring Road, but an entirely different concept altogether – a very different pattern of primary highway routes for all areas to the south and east of the city and one which does not have to rely on the continued use of so many of the existing radials for the primary distribution of traffic. We consider that an alternative route should be investigated as a matter of urgency. Nevertheless we realise that the City are at present committed to the Inner Ring Road proposal and wish to reserve this position. Under these circumstances we cannot do otherwise than accept that the line is preserved for the time being, but also recommend that further consideration should be given to the matter when the Transportation Study results are available. If it is then decided that there should be a major road on the present line it should be sunk below ground level.

**5.20** It must be pointed out that in our opinion if the Ring Road is constructed on this line there will be very considerable problems in the design of suitable junctions at Upper Brook Street and Cambridge Street. These must also be able to deal with the traffic from the Precinct and the adjacent areas and the Grafton Street cross link. This link is essential to give access to the car parks and buildings on the southern part of the Precinct.

### Prospects after 1972

**5.21** The estimated level of car ownership in Manchester in the year 2010 (Appendix E), although less than the projected national average, represents a doubling of the present number of vehicles and raises the possibility of a trebling of the potential demand for their use.

**5.22** The important point is that the most rapid period of growth is over the next 15 years, a period which coincides with the physical development of the Precinct. Our short-term and longer-term proposals would go a long way towards achieving the desired traffic conditions within the Precinct. But should these be achieved it would be important that they are maintained in the face of the further traffic demand. This implies either a further increase in car parking provision and approach road capacity or the introduction of effective measures of restraint on the use of the private vehicle. As far as car parking is concerned, our proposals are flexible enough to accommodate further increases, but changes in the approach highway capacity will be entirely dependent upon the City's overall policies in relation to the development of highways and the control of traffic.

**5.23** The general conclusions that can be drawn as a result of this traffic study are as follows:

i. The combined capacity of the improved Upper Brook Street and Cambridge Street, plus a northwest extension of Princess Parkway would be adequate for the north–south movement demands and Oxford Road would no longer have to serve as a major traffic route. In this connection we would stress the great importance of an early improvement of Cambridge Street.

ii. Effective measures should be introduced to restrict the type of traffic entering the Precinct along Oxford Road to its essential traffic load, consisting of public transport vehicles, commercial and business vehicles serving local premises and visitors' vehicles (see paragraph 5.8)

iii. Mancunian Way will attract a large proportion of the longer east–west through movements, which would otherwise pass through the Precinct. The magnitude of the remainder of the east–west traffic does not appear to us to justify both the inclusion of two local cross routes and a major primary route in the form of the Inner Ring Road as incorporated in the City's current long-term road proposals.

iv. In relation to traffic demands in this section of the city, it would, therefore, appear quite feasible to relocate the ring route on a line to the south of the Precinct, thus avoiding the difficulties of access, noise control and disruption of the environment that arise from its location within the Precinct. The two internal cross-routes we propose would then be quite adequate to serve local traffic needs.

v. A pricing policy and rationing of car spaces will be necessary to restrain effectively the use of the private vehicle. The parking facilities should be distributed on the basis of achieving a balanced relationship to the local and primary routes serving the Precinct. Even the limited provision of 6,000 parking places would necessitate the development of some multi-storey car parks (Chapter 4).

vi. An efficient public transport system capable of handling much increased loads will be required to counter-balance any restraint in the use of private vehicles.

vii. Only a very general indication of the long-term prospect in relation to traffic and car parking can be given at this date. We believe that service traffic and visitors' and students' vehicles can be catered for and appropriately disciplined to achieve the desired environmental standards in and around the Precinct by the year 1972. After this date, it is inevitable that the demand for vehicle use will go on rising, but the extent to which it will be possible to cater for the demand will depend on many outside factors, not the least of which will be the City's overall policy in relation to traffic, highways and public transport policies.





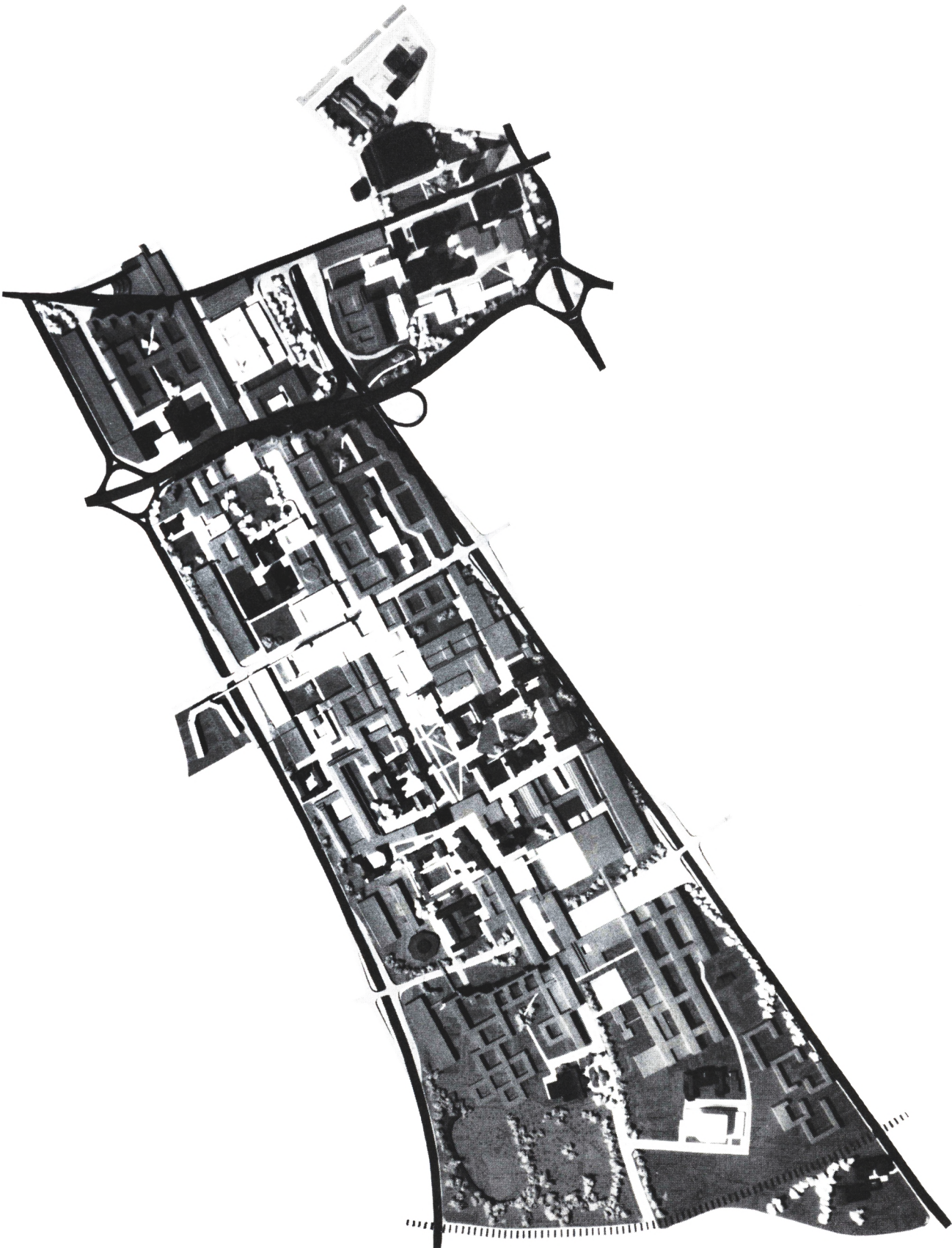


Figure 6.1 Major elements of land use 1984





**6.1** The planning context of the Precinct in terms of major traffic movement has already been discussed in the preceding chapters; it will form an environmental area of an elongated shape bounded on the two long sides by district distributor roads, Upper Brook Street to the east and Cambridge Street to the west.

**6.2** The overall pattern of land use and communications within the Precinct has been conditioned to a great extent by the existing distribution of educational buildings, the Hospital, features such as Grosvenor Square and the dominant route of Oxford Road which divides the main area of the site into two halves and contains the principal underground service runs. The general disposition of buildings has been affected to a great extent by such factors as the ground conditions, noise and climate.

### Ground Conditions

**6.3** As stated in Chapter 2, the geological fault which crosses the site has now been found to run to the west of the line given in the Ordnance Survey Geological maps. There could be foundation difficulties if tall buildings were sited on this line and this has caused a fundamental revision to the disposition of high and low buildings on the Student Quarter site.

### Noise

**6.4** The problem of traffic noise generated by the main roads surrounding the site is particularly important, since, because of its long narrow shape, a greater proportion of the buildings are near to the roads than would be the case with a square site. The elevated Mancunian Way will create considerable traffic noise. Obviously some sort of screening will be required if the necessary conditions of quiet are to be achieved in the interior areas. Too little is known about the behaviour of noise waves in built-up areas but enough has now emerged to make it certain that planting of trees and shrubs along the perimeter of the site would, in itself, be insufficient. Much better screening would be provided by buildings whose functions do not require quietness. Such buildings would include multi-storey car parks, laboratories accommodating noisy activities and any fully air-conditioned and sealed structures. Providing such buildings are fairly continuous and of a height of at least five storeys, they would ensure substantial protection against traffic noise penetrating far into the site. The problem of noise on Oxford Road still remains although it will be less serious as the traffic volumes are reduced.

### Climate

**6.5** Appendix G includes details of the climate in Whitworth Park. This gives mean temperatures during the academic year of a little over 40°F with some rain (statistically) every other day; about 40 mornings in term-time with fog, and with bright sunshine recorded for only 25% of the hours possible. Such uncongenial weather lends particular force to the argument for covered routes between buildings which are already separated and for future buildings to be designed in a continuous form such as in a street or around courtyards or lawns, so that as much shelter as possible from the elements is afforded by the buildings themselves.

**6.6** We also consider it important that pedestrian movement out-of-doors should take place in areas which will catch the maximum amount of sunshine and this consideration has contributed to the disposition of the high and low buildings on the site. The taller residential buildings, for instance, have been sited in continuous forms running east to west and immediately south of the heaviest traffic routes across the site. So arranged, the shadow cast by the buildings will be of least consequence and the buildings themselves will screen the pedestrian areas to the south from traffic noise whilst

ensuring that the maximum solar reflection is directed into them.

**6.7** The direction of the long axis of the site is such that buildings placed parallel to it will, for the first two terms of the academic year, receive sunlight on only two faces instead of three and this should be borne in mind in the detailed design of many of the buildings for the Precinct.

### Major Land Uses

**6.8** Figure 6.1 shows the major elements of land use in the Precinct. These follow a pattern of extension to the existing areas and are largely related to land ownership. The University area extends from Booth Street to Grafton Street and Whitworth Park; the Institute area, in addition to the existing site at Whitworth Street, extends southwards to Booth Street; the Business School occupies a site on the south side of Booth Street West adjacent to the proposed Precinct Centre; the City Colleges area extends from Chester Street on the north to Booth Street on the south; the B.B.C. site adjoins Oxford Road and Charles Street; the Hospitals development extends from Grafton Street to Oxford Place, on the east side of Oxford Road. As stated in Chapter 3, the only potential for the extension of the Precinct as a whole to meet the demands which now seem likely to arise is northwards towards the city centre.

**6.9** Special reference must be made here to two other land uses – residential and recreational – since these are common to all the parties using the Precinct.

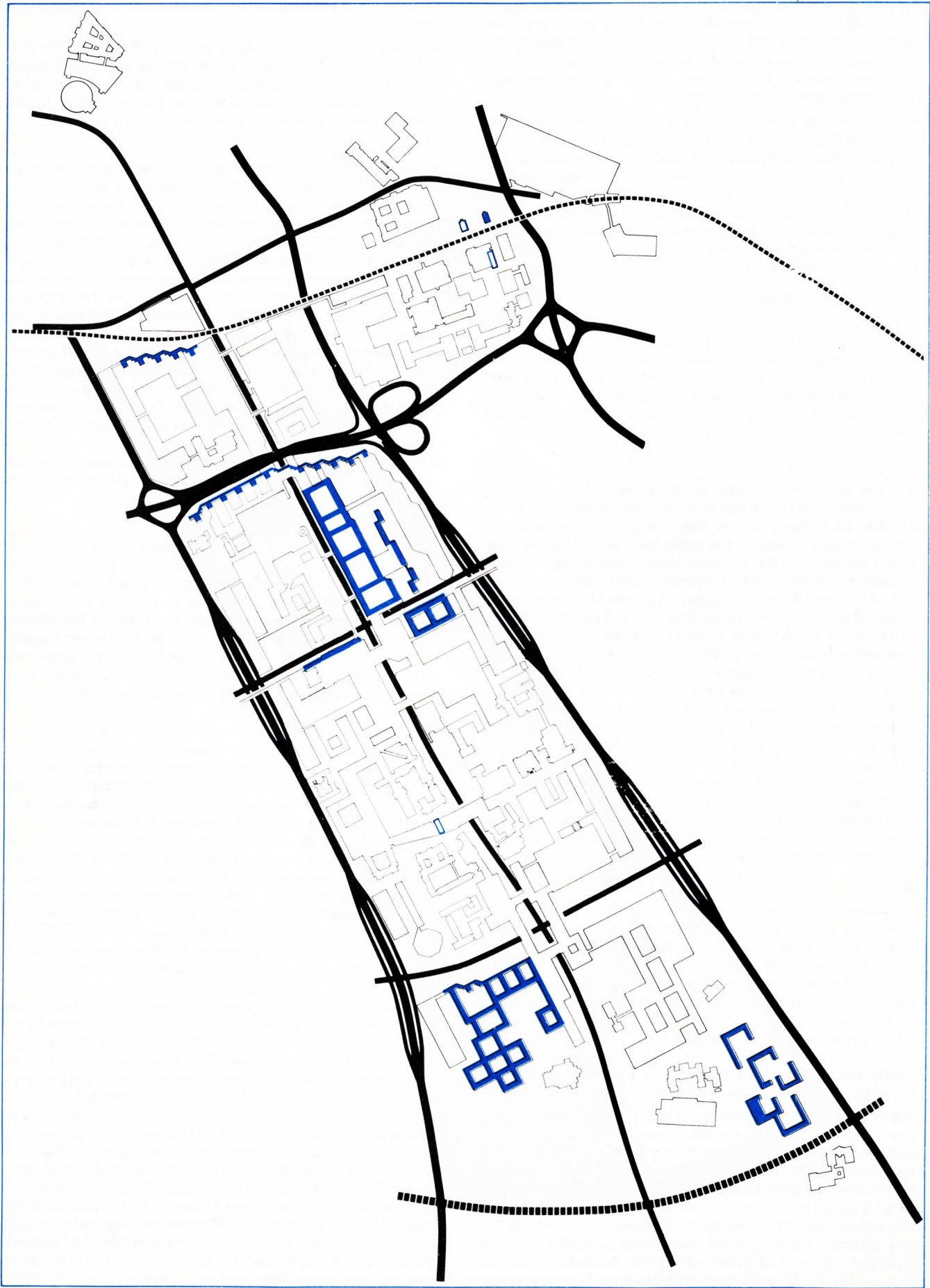
### Residential

**6.10** There is no doubt that the greatest single step which could be taken to invigorate the life of the Precinct would be to build as much residential accommodation as possible within the area and to allow this to be used by students from all the institutions on the site. The Institute has already initiated such a move in their idea of a Student Quarter between Mancunian Way and Booth Street East. Important transportation arguments for having a substantial proportion of students living on the Precinct have been given in Chapter 4.

**6.11** We have given considerable thought to the siting of this housing. Our original idea was to place the bulk of the accommodation in continuous high buildings along the spine of the site, on the east side of Oxford Road at the northern end and on the west side at the southern end. Such a scheme would have assured full utilisation of the site and of the lift and service installations, economy of perimeter walling, and great flexibility of the use of buildings with many opportunities for association and contact between the students. There were also important architectural considerations involved in having the right scale of structure in relation to the Precinct as a whole and to the city. This could have been the unifying element of this very extensive area. We dealt with this at some length in our Interim Report.

**6.12** We still propose to retain the continuous slab blocks in some areas where they run east-west; for example to the south of Mancunian Way, Booth Street and the western extension of Grafton Street. The spine proposal, however, we have reconsidered for three reasons. Firstly, the presence of the geological fault will create very difficult foundation problems, as previously mentioned; secondly, our study of the noise problem has led us to believe that a tall housing block placed along the spine of the site could suffer from traffic noise generated on Upper Brook Street and Cambridge Street; thirdly, the housing, perhaps more than any other element in the Precinct, should be capable of being built in stages without appearing incomplete and providing at each stage some protection from the nuisance of building activity which might well be going on around it for many years.

Figure 6.2    Distribution of student residences in the Precinct 1984



**6.13** The form of housing we now propose, apart from the high slab blocks referred to, is of 5 storey courtyard development with the major pedestrian movement at second floor level so that lifts are not required for the normal movements of students. This housing is located in two areas; on the Student Quarter site between Mancunian Way and Booth Street, and on the west side of Oxford Road between the Humanities building and Whitworth Park.

**6.14** Including the housing already provided at the Institute and at Moberley Tower at the University, there is capacity in the Precinct for about 7,000 study bedrooms (Figure 6.2).

#### Recreational

**6.15** In conjunction with the earlier spine block concept we envisaged an outdoor sports arena and an indoor sports centre in the Student Quarter. We are now suggesting that provision should be made for an indoor sports centre with a first stage floor area of over 200,000 sq. ft. which would provide for a full range of these activities.

**6.16** We also suggest that in the long term consideration might be given to more active recreational use being made of Whitworth Park which could be of benefit to the adjoining housing areas as well as to the Precinct.

**6.17** Other open spaces are distributed throughout the site; in large areas such as Grosvenor Square, in front of Owens and in the Science Area of the University, and in smaller areas in courtyards or between buildings. Many of these spaces have been sited immediately south of the taller buildings and, being sheltered from both the wind and traffic noise by other structures, they should be pleasant places in which to sit in fine weather.

#### Service Traffic and Car Parking

**6.18** The local network of service routes giving access to the various buildings in the Precinct must, of course, be related to the points of entry to the area from the surrounding city main road system. We have already stated in Chapter 5 that these points will be at either end of Oxford Road, Booth Street and Grafton Street (Figure 6.3).

**6.19** The greatest number of vehicles will be cars belonging to students, staff and others working in the Precinct. It is proposed that the major car parking areas should be sited along the perimeter of the site, facing on to Upper Brook Street and Cambridge Street and with access from the cross routes. In these positions they will lessen the load on the internal road system and by keeping them as separate structures, they can be erected when required and in the most economical form. They will also afford considerable protection to internal areas of the site against perimeter traffic noise (Figure 5.1).

**6.20** In principle the service road network, with loop roads or culs-de-sac, can be planned in two ways. It can be based on a central collector road (Oxford Road) or on two peripheral collector roads.

**6.21** We have studied these alternatives very carefully and in our view there is no doubt that the central road will provide the better solution. The siting of peripheral roads within the site (and this would be necessary), would seriously hinder the development of the Precinct because the amount of land available for development would be reduced and there would be greater need to provide screens against traffic noise. But most important it would severely hamper local movement within the site and throw even more traffic onto the already overloaded city roads.

**6.22** In the Interim Report we suggested that the length of Oxford Road in front of Owens should be closed in due course and the traffic diverted along Spa Street and Bridgeford Street with a new link road behind Owens.

This proposal was criticised because it was felt that the traffic noise would have a detrimental effect on the buildings in this area which are for uses demanding a quiet situation. We have been unable to find any practicable alternative to using Oxford Road along the whole of its length as the main service spine route and we have, therefore, concentrated our attention upon reducing the level of traffic using it to the lowest possible limits. We have recommended in Chapter 5 that ultimately it should be used only by public transport and by vehicles serving the Precinct. When this is achieved, its width should be reduced to three lanes, with lay-bys provided at bus stops. The removal of as much traffic as possible from Oxford Road would effect a most desirable improvement to the environment of the original University of Manchester, particularly when considered in conjunction with our proposals to form a major enclosed space in front of Owens. To sink the road here would be a very costly operation and to raise the pedestrian level is impossible because of the existing buildings. We strongly recommend, therefore, that this length of the road should be treated as an integral part of the design of the large new quadrangle by using a surface in harmony with the buildings and the paved and grassed areas rather than a highway "tarmac" finish. As well as greatly improving the architectural concept of this space this proposal would indicate to drivers that they had entered an area of special environmental significance. To travel northwards under the bridge containing the banquetting suite, to emerge into the large quadrangle with Owens on the left and the new Science Area on the right, and to see the new Maths tower almost, but not quite, closing the vista could be a most exhilarating experience.

#### Pedestrian circulation

**6.23** Even with traffic restricted to public transport and service vehicles there would still be serious conflict between moving vehicles and the large flows of pedestrians within the Precinct. Despite the fact that these pedestrian journeys will tend on the whole to be short, as it has been the aim in the location of particular departmental buildings to place them near to others used by their students and staff, many of the journeys unavoidably involve crossing Oxford Road. To ensure safe, easy movement for pedestrians, both in the short term whilst traffic in Oxford Road is still intense, and ultimately, a complete system of vertical segregation is necessary. This is achieved by footpaths incorporated within the new buildings at an upper level, and linked by bridges across Oxford Road, Booth Street and the line of the lower Ring Road. Around existing buildings, footpaths are located at ground level and routed through courtyards and landscaped spaces away from the traffic roads. These two levels of pedestrian footpaths are linked by ramps and staircases with escalators or travelators at key points (Figure 6.4).

**6.24** Some of the necessary movements within the Precinct (such as from the Institute's existing area to the residential accommodation at the south end of the Student Quarter) are unavoidably long and cannot be made by bus. We consider that some thought should be given to the provision of cycle lanes at ground level throughout the Precinct. These could run alongside footpaths in some areas and alongside roads in others. For example, at the time when Oxford Road is narrowed to three lanes and its footpaths are diverted, consideration might be given to introducing flanking cycle paths.

#### Planning Grid

**6.25** In allocating sites for buildings we have used a planning grid of 36 ft. 0 in. over the whole of the extension areas as this is a module which we have found to be applicable to most types of academic accommodation.



Figure 6.3 Service road network



Figure 6.4 Pedestrian network, bus stops and railway stations













This does not imply the imposition of any preconceived structural systems, but its use in this general way will ensure that the later sites to be developed (which will normally be tightly defined by party-wall-conditions) will be of usable dimensions whatever the ultimate nature of the programme.

**6.26** This general framework of land use and communications will provide a guide to the more detailed development of the Precinct, the main lines of which are put forward in the following Chapters.

Figure 6.5 Plan at October 1965



- |   |   |   |
|---|---|---|
|  existing Precinct buildings  |  grassed and planted areas |   |
|  non-Precinct buildings       |  Mancunian Way             |  car parks               |
|  buildings under construction |  roads                     |  Altrincham railway line |

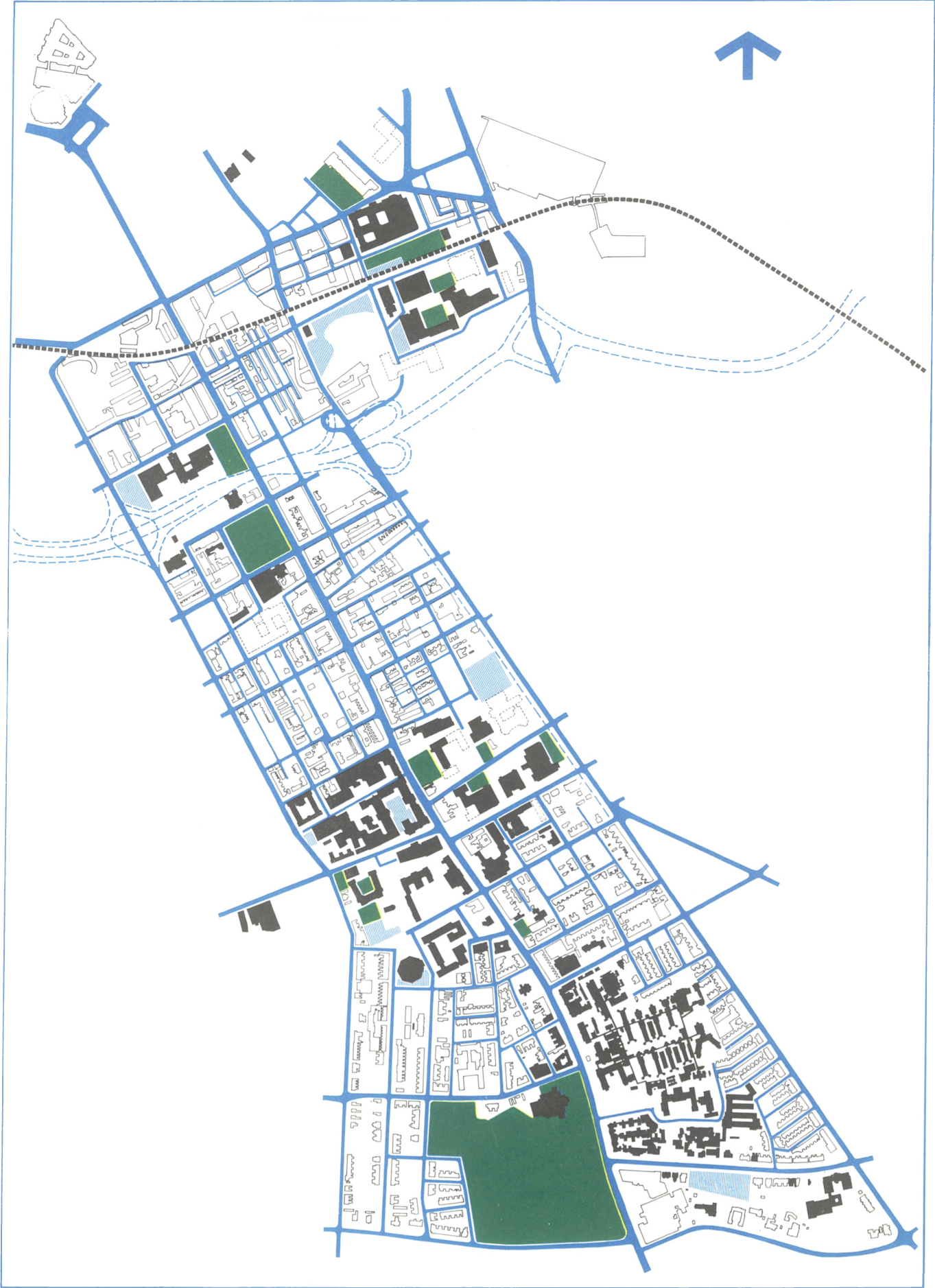




Figure 6.6 Plan at October 1968

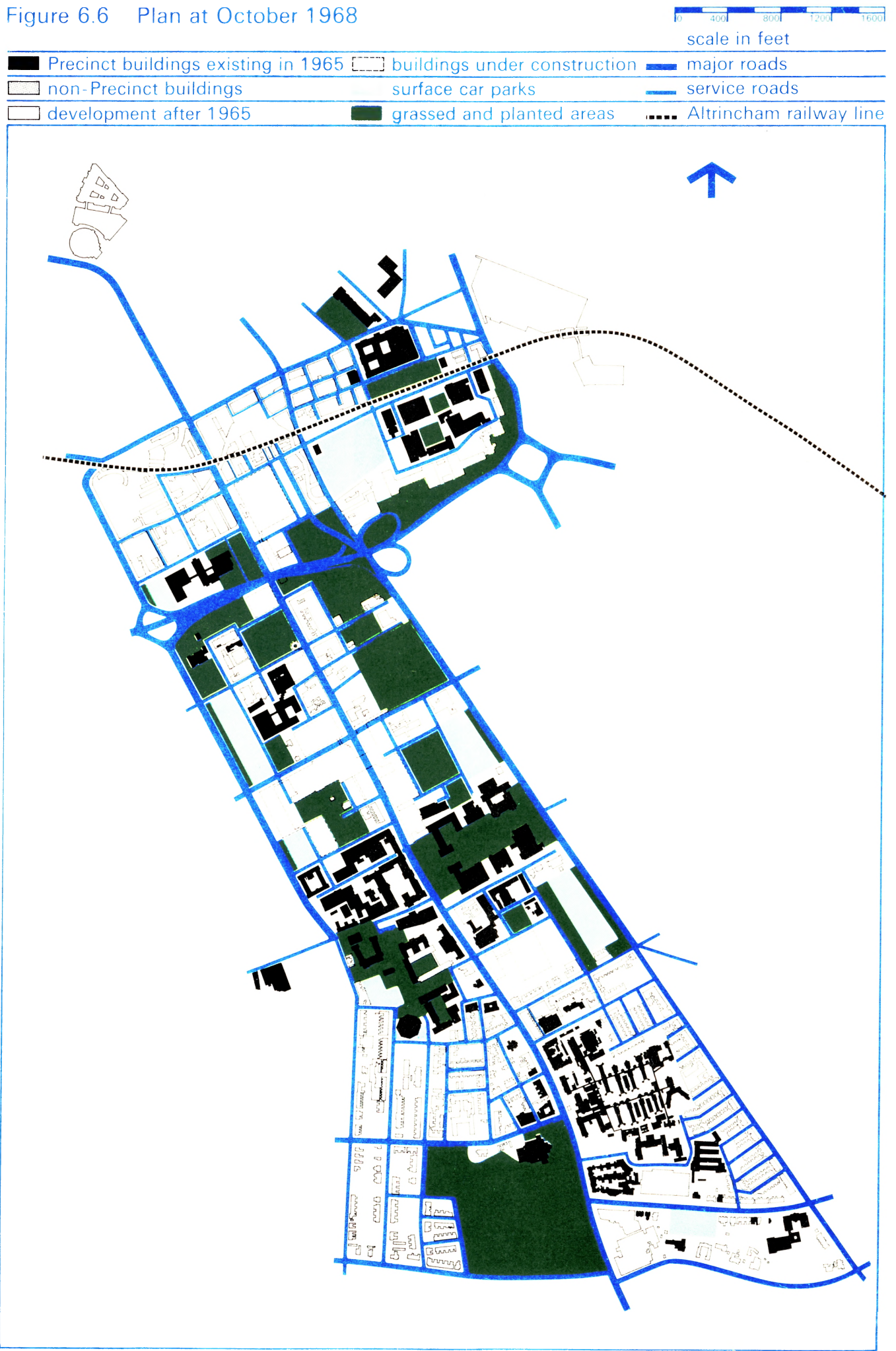


Figure 6.7 Plan at October 1972





Figure 6.8 Plan at circa 1984



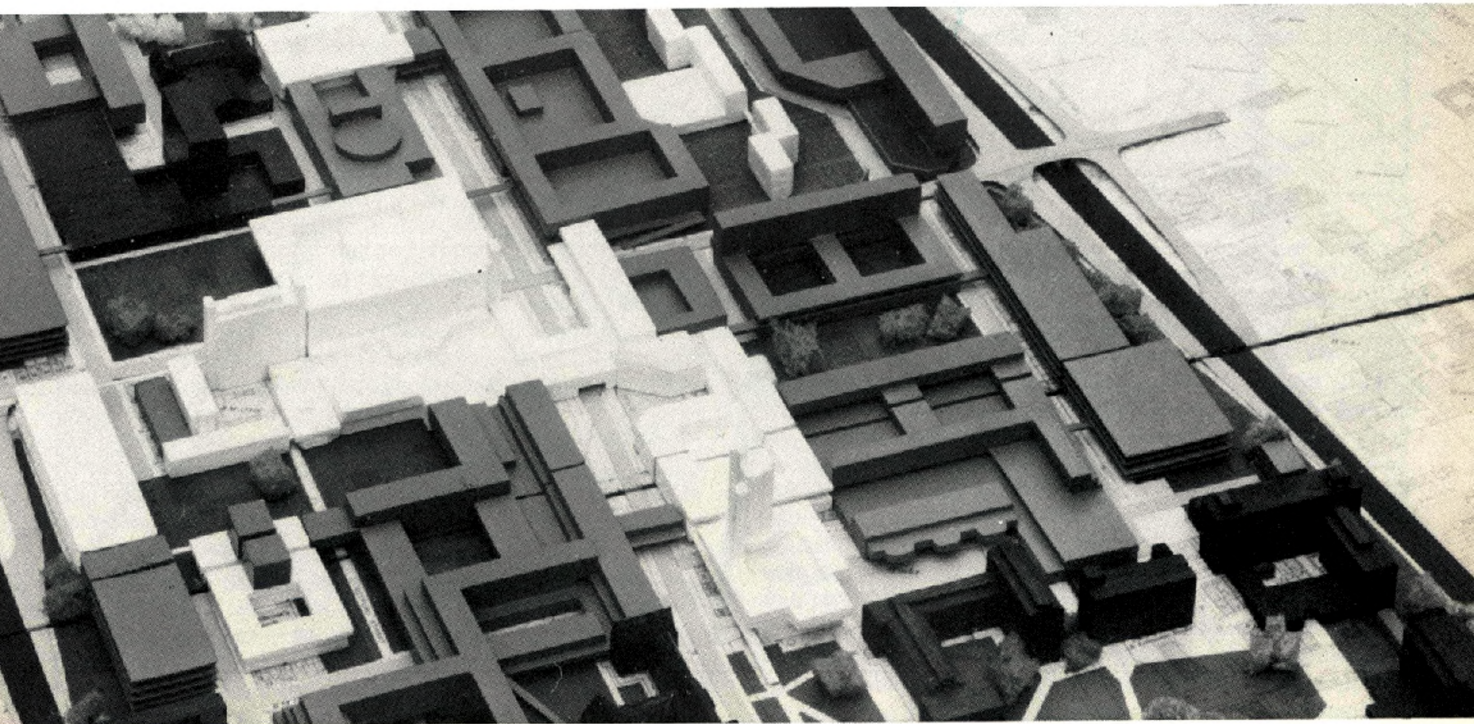




Figure 7.1    Distribution of sub-centres in the Precinct



**7.1** Because of the size and central position of the Precinct it is important that it should generate the closest possible ties with the life of the city. It can offer a variety of local "town centre" functions which should serve as wide a population and range of interests as possible. In order to achieve this, it is proposed to group these activities in a Precinct Centre located in the most central and accessible position within the area (Figure 7.1). This location is at the junction of Oxford Road and Booth Street on a site immediately to the east of the Business School, close to the early student housing areas and on an axis with the central parts of the surrounding city housing areas of Brunswick and Hulme. This places it at the focal point of the local public transportation routes as the City Transport Department intends to route by way of Booth Street and Oxford Road those 'bus services which will link the two adjoining housing areas to the city centre.

**7.2** In order to ensure the orderly progress of many developments within the Precinct, it is essential that alternative accommodation should be provided at a very early date for those retail businesses and professional office users who wish to remain in the area. In this connection the City Council is always anxious to ensure that suitable alternatives are available when Compulsory Purchase Orders are made on behalf of the University. The University has taken the initiative in sponsoring a detailed study of the shopping requirements within the Precinct. We have made an economic assessment of future shopping demand and have prepared an outline scheme and approximate estimate of building costs for a main centre – the Precinct Centre. We consider that there is enough commercial interest in the scheme to warrant an early start being made on its construction.

**7.3** In addition to the shops and professional offices, the Precinct Centre will become the focus of a variety of activities catering for both town and gown. It may include a new Student Health Centre, a public library, a small police station to replace the existing one in Ormond Street and housing accommodation for staff, married students and people working within the city. It is proposed that the new Anglican Church, replacing St. Ambrose's Church, and the new Methodist Church and Ecumenical Chaplaincy be located on separate but adjoining sites immediately adjacent to the Centre. In addition, the public foyers of the Northern College of Music and the entrances to the Indoor Sports Centre on the Student Quarter will be immediately adjacent to it (Figure 7.2).

### Shopping needs

**7.4** The shopping facilities on Oxford Road have served the surrounding residential population living both within the present Precinct and in the immediately adjacent areas of Brunswick and Hulme. Their considerable variety of facilities provided a very useful amenity to the University itself, but the gradual decline and subsequent demolition of the adjacent housing has led to their serious deterioration. The departure of Paulden's department store from Stretford Road hastened this process. At present a number of shops are vacant or have been demolished and the majority of those in use are in poor physical condition and are occupied by small local traders or by wholesalers for showroom purposes.

**7.5** However, the extensive housing areas hitherto served by the Oxford Road shops are now being redeveloped and this will soon result in a large increase in population, requiring adequate shopping facilities. This presents a choice of either providing separate small shopping centres within the Precinct and each housing sector, or of concentrating certain of the requirements in one relatively large

centre, placed centrally and providing a much wider range of facilities. The latter is the choice we recommend.

### Sub-Centre and Minor Facilities

**7.6** In addition to this central facility, however, we also recommend that several sub-centres should be provided to serve day to day local needs (Appendix H). One of these should be within the Precinct, and the existing group of shops in the Grafton Street area on Oxford Road should form its nucleus. This group is compact and well placed and would be reinforced by the provision of further new shops as the demand arises; this is likely to coincide with the provision of student residences at the southern end of the site.

**7.7** The only commercial uses which should be located within the Precinct but outside these two centres are certain service facilities of limited size and function. Such uses include corner or single kiosk type shops similar to that in the University Student Union, public houses and small cafes or restaurants. Our proposals for their location are shown in Figure 7.1.

### The Precinct Centre

**7.8** This main shopping centre would be able to draw on a total population of approximately 3,700 from parts of the Hulme 3 and Brunswick 1 (Rusholme Road) Areas by 1971. In addition, the intensive development of the Precinct is expected to provide a day-time population of 25,000 by 1971/2 and 42,000 by 1984 (Appendix H). Up to 7,000 people are expected to be living within the Precinct by this latter date.

**7.9** It is estimated that such a population could support a gross shop and service trade floor area within the Precinct Centre of approximately 70,000 sq. ft. by 1971/2 and over 100,000 sq. ft. by 1984. The most important benefit to be derived from a concentration of this magnitude would be the ability to provide a great variety of facilities and a really worthwhile centre for the whole area. General convenience shops could offer an excellent choice of goods, and in addition a number of speciality outlets could be expected. These might include specialist bookshops, a delicatessen, restaurants, snack bars, public houses, business machine, sports and musical instrument shops. In addition to the calculated requirements given above it is likely that a number of the existing professional offices would also wish to remain in the area.

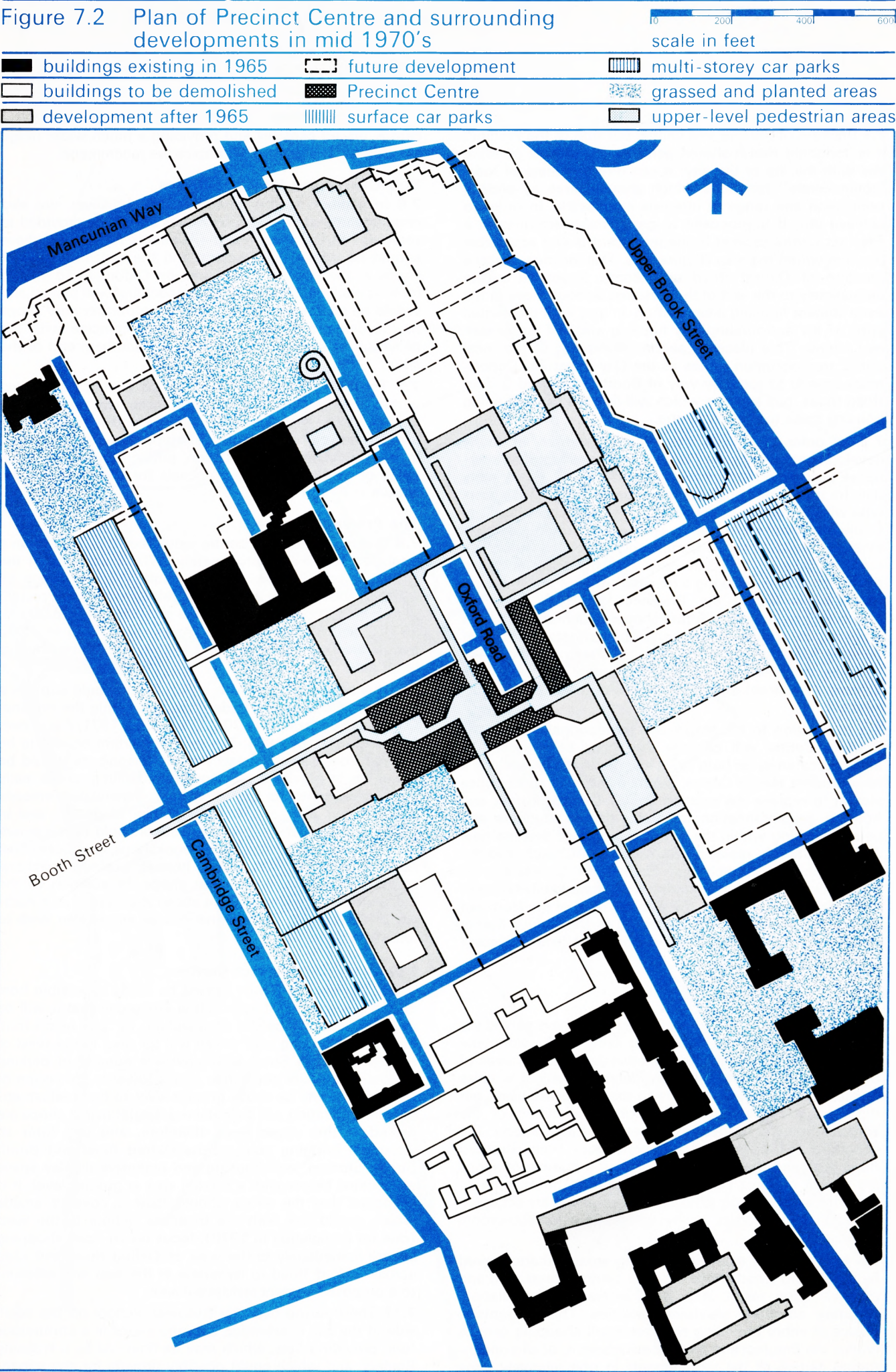
### Layout of the Precinct Centre

**7.10** The Precinct Centre should be easily accessible from all the areas which it serves. It is envisaged that it will be used primarily by people approaching by 'bus or on foot, but the car parking area which will be sited to the west of Higher Chatham Street will provide a number of parking spaces. The major pedestrian walks towards the centre of the Precinct will be above ground level so that pedestrian-vehicle separation will be obtained. The principal shops are placed at this upper level, therefore, and will form an important bridging point across Oxford Road and Booth Street. Storage, warehousing and extensive display space are located below with a service area at ground level. It is proposed that the shops should flank a covered arcade which would link with the Business School to the west (due for completion in 1970), focus on an open shopping square immediately to the west of Oxford Road and span across Oxford Road to terminate at the east end adjacent to a proposed student residential area.

**7.11** The housing over the Business School on the north side of the site is extended over the shops in a continuous form providing flats, which may be financed by a Housing Society, and which could possibly provide for any expan-



Figure 7.2 Plan of Precinct Centre and surrounding developments in mid 1970's



sion of residential space for the Business School. Approximately 80 flats could be provided in this form.

**7.12** The offices are situated above and to the rear of the shops on the south side of the site. They overlook a green space to the south and a paved roof garden to the north, and they would not only provide accommodation for many of the existing professional and business offices within the Precinct but also for any immediate or future needs of the University. It would be possible for the Business School ultimately to expand into some of this office accommodation.

**7.13** It is proposed that the Student Health Centre be located to the east of the bridge over Oxford Road. This places it in a central position yet provides adequate opportunity for later expansion. The housing immediately to the east would be suitable for post-graduate and married students and its catering facilities could directly serve the proposed sick-bay in the Health Centre extension.

**7.14** The proposed police station is also sited at the eastern end of the Precinct Centre, in a position from which police cars will have direct access along Booth Street and Oxford Road to all parts of the site and surrounding areas.

**7.15** A City branch library may be located at the north eastern end of the Centre where it bridges Booth Street East. This library would serve the adjacent parts of the housing areas of Brunswick and Hulme, as well as offering a service to all the institutions within the Precinct particularly the City Colleges. The exact nature of this service is now being discussed by a Working Party of the Joint Committee.

**7.16** It is proposed that the Anglican Church and the Methodist Church and Ecumenical Chaplaincy should be located on adjoining sites in the southern part of the Precinct Centre, fronting the east side of Oxford Road and directly accessible from the 'bus stops. In this location each could occupy a prominent position on Oxford Road and could take advantage of the proposed grassed area to the east. It is envisaged that the two buildings would be separate and that their main pedestrian entrances would open off separate spaces, but that the two individually small building schemes could be developed as one architectural group.

**7.17** The directional form of pedestrian movement in the Precinct Centre, running east-west across the Precinct south of Booth Street and placed above street level, would extend very naturally as a bridge over Cambridge Street and so form a strong tie with the adjacent Hulme 3 housing area. At the point where this bridge meets the Hulme 3 area, the City has reserved a small area of land for residences to be financed and developed by a Housing Society. We strongly recommend that this area be carefully designed to continue the footpath from Hulme 3 over Cambridge Street to the Precinct Centre, and that the creation of this important link be implemented as soon as possible. The availability of this kind of housing adjacent to the Precinct could prove very attractive to married staff as well as to the general public.

**7.18** The Precinct Centre, with its open courtyards and covered arcades and squares should provide a lively and interesting environment. Being centrally placed, efficiently serviced, flexible in layout and very varied in use, it should prove attractive to shopkeepers, to students and staff, and to the public in addition to playing an important part in the integration of town and gown.





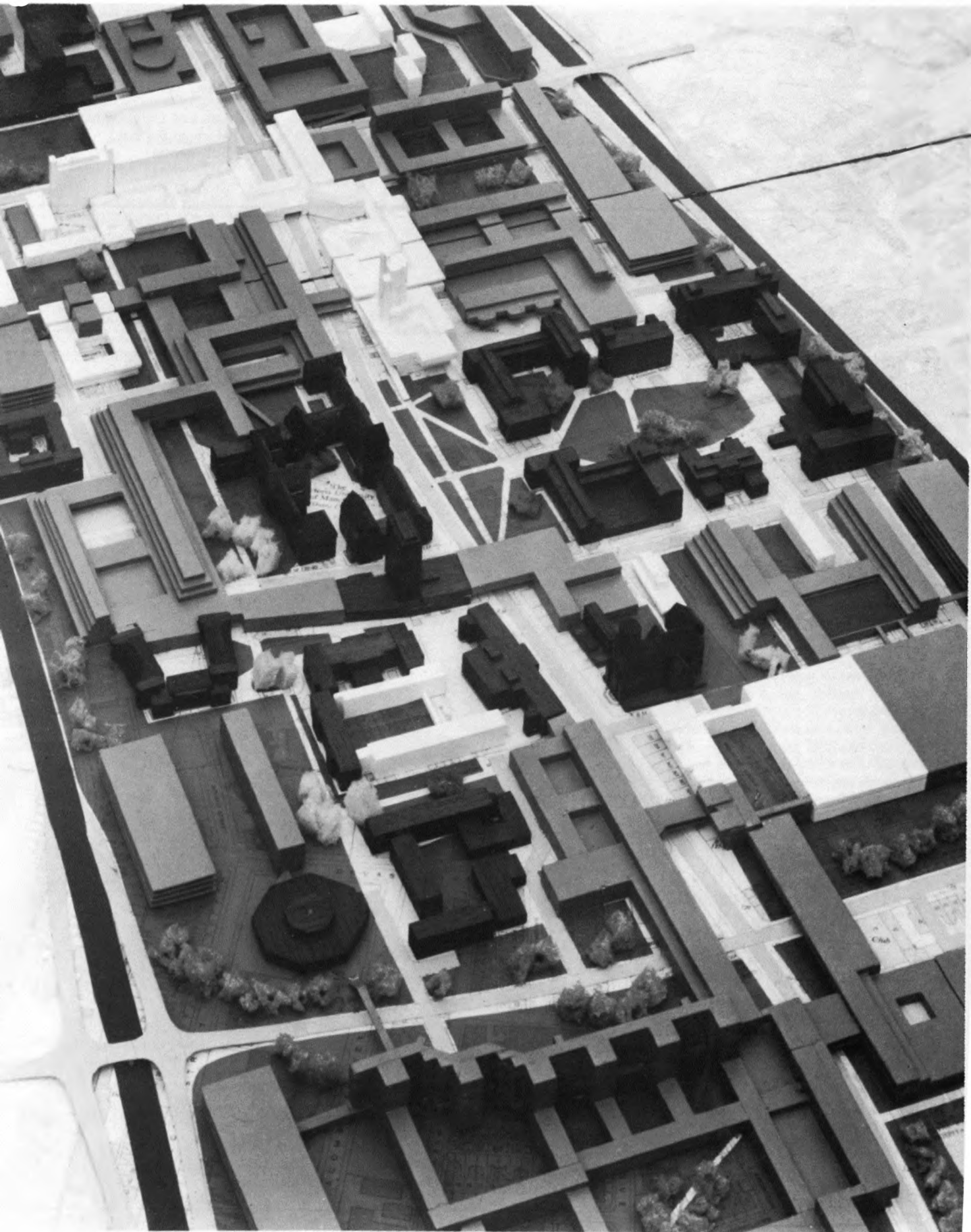
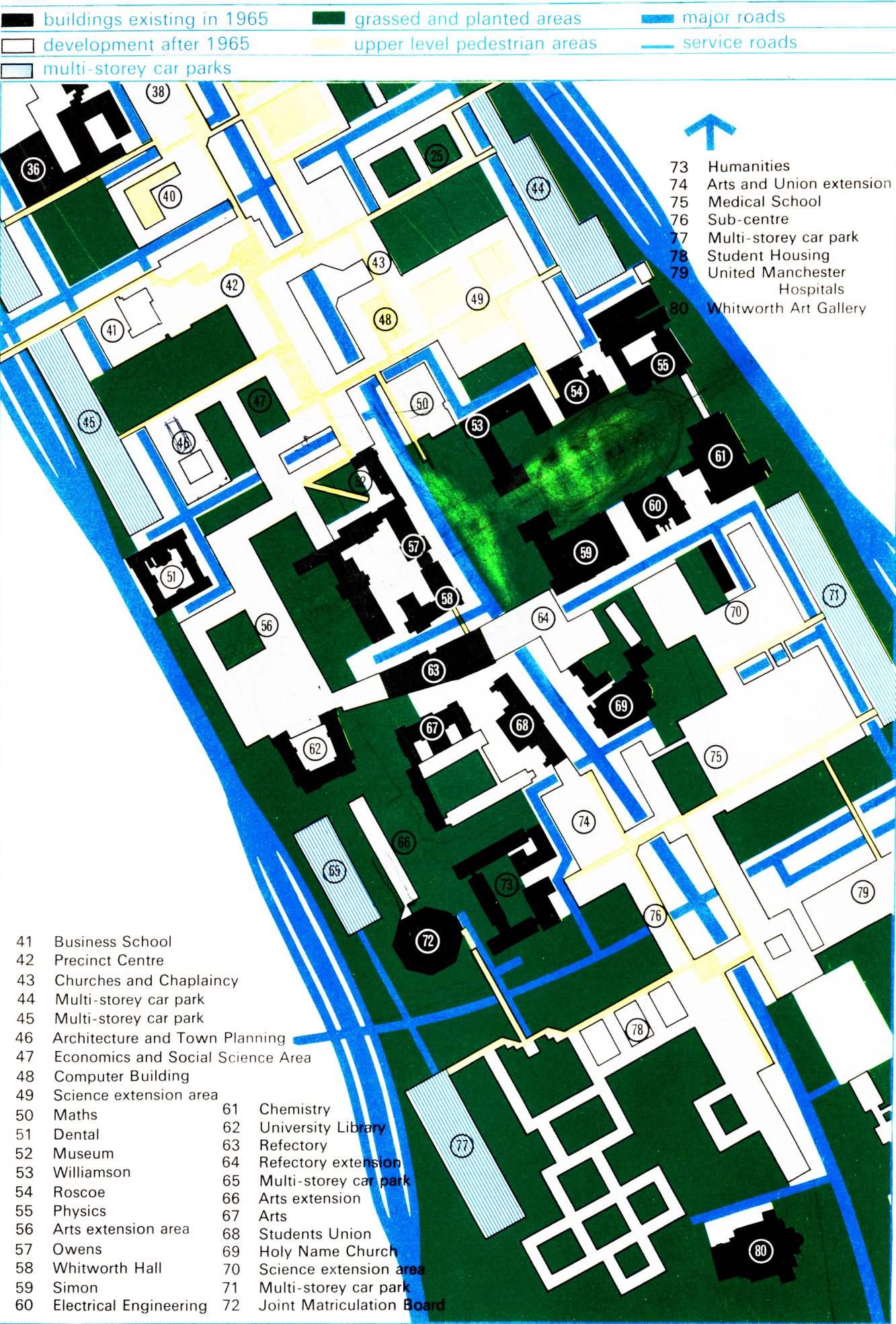




Figure 8.1 University area, 1984





## Present Position

**8.1** At the time of the survey in 1965 the population of the University comprised 6,642 students, 879 academic staff and 1,709 other staff. Future growth is difficult to forecast with any accuracy but the latest estimate by the Registrar is that the student number will rise to 8,800 by 1972. This is likely to lead to increases in academic and other staff of 1,164 and 2,200 respectively.

**8.2** At the present time the University is engaged in building new accommodation for the Physics Department in a building to the north of the Chemistry Building, and further accommodation for the Department of Economics and Social Science in a new building in Dover Street. Construction is about to commence of a new building for the Mathematics Department on the site on Oxford Road, south of Wilton Street, which we recommended in the Interim Report. A further extension of the Arts Building has also commenced. A new building for the Schools of Architecture and Town Planning is planned on a site north of Bridgeford Street and the Business School is to be located south of Booth Street and at the west end of the proposed Precinct Centre. Further academic priorities at the present time are Computer Science, which will be housed with a Computing Centre, and Medicine.

## Service Road Network

**8.3** 1967 could be a year of great significance in the development of the University. With the opening of Mancunian Way and recent improvement of Upper Brook Brook Street southwards from its junction with Mancunian Way as far as Grafton Street, there will be a unique opportunity to effect a number of significant road closures. The most important of these are Brunswick Street, between Upper Brook Street and Oxford Road, and the stopping off of Burlington Street as a through road at the westerly end. These would bring immediate improvement to working conditions in the Science Area and to the area adjacent to Owens, and would make possible the completion of part of the development plan prepared by Sir Hubert Worthington many years ago.

**8.4** In that year also, it is anticipated that the purchase of considerable areas of old housing to the north of the University and on either side of Oxford Road will have been completed and the buildings demolished. We recommend that, at this time, the service road network which will be required during the further development period of the University should be established progressively, and made effective by a series of minor street closures. This will enable a greater degree of control to be exercised over traffic flow in the Precinct and in this way a start can be made on the improvement of the University environment.

## Car Parks

**8.5** We also recommend that the areas reserved as car parks should be carefully laid out with entrances and exits clearly defined and controlled and with trees planted between the main lanes of parking. By so doing, inexpensive but major environmental improvements can be achieved at all stages in the development of the Precinct. The trees could be transplanted when multi-storey car parks are erected.

**8.6** In the University area there will be spaces for about 1,000 cars in surface car parks including some 'front door' car parking. Some restraints in car use will need to be imposed to reduce the demand to this number. The unrestrained demand will have risen to about 2,300 places by 1972 and we recommend the provision of about 1,900 spaces, 1,100 of which will need to be in a multi-storey car park on Higher Chatham Street immediately west of the Business School. It has been assumed that the new sites for further academic buildings will have been used up by the

mid eighties and present predictions of car use show that by 1984 the demand will have risen to 4,800. The peak demand for car space is unlikely to be reached until nearer the turn of the century. The sites suggested for car parks will be capable of providing for 6,000 University spaces when fully developed to five storeys.

**8.7** Table 3.1 shows the expected allocation of University floor space within the Precinct in 1967. One of the aims of the plan is to maintain an appropriate balance of space allocation between academic and ancillary uses.

## Laboratories and Workshops

**8.8** Figure 8.2 shows the present disposition of laboratories and workshops. These lie mostly to the east of Oxford Road and there are areas available for extension to the south and to the north of the existing Science Area. In addition to the new Medical School and the new Dover Street Building which will remain, there will be space for about 300,000 sq. ft. of gross floor area on the site to the south of Dover Street when the old building is demolished. We suggest that this be reserved for Biological Sciences or for an extension to the Medical School.

**8.9** To the north of the Science Area it will be possible to build between 350,000 and 400,000 sq. ft. of gross floor area. We suggest that for these areas new accommodation should be in a continuous form over the site and constructed on a repetitive frame system capable of having intermediate floors inserted or taken out, with smaller laboratory spaces arranged around courtyards above the general roof level of the workshop area. Such an arrangement together with a grid of services below this roof level, will give maximum scope for later internal rearrangement.

## Other Teaching Space

**8.10** Figure 8.3 shows the disposition of classroom and lecture room space. The rooms in the Arts buildings are used fairly equally in the morning and afternoon, while in the Science buildings, classroom space tends to be used in the mornings only. It is important in the design of new accommodation, therefore, that lecture rooms should be sited where they can be easily reached from major routes and that the advantages of their being under separate control should be considered. In this way more sharing of these facilities may be possible, so leading to more efficient use. Physics and Chemistry are to be largely self-contained in this respect and might derive benefit from being linked in the future at ground level across the present Brunswick Street with more staff rooms when these are required. Such a building would also help to keep traffic noise out of the Science Area.

## Libraries and Reading Rooms

**8.11** The Main University Library is off Lime Grove, with libraries for Science and Medicine housed in separate buildings. In addition, most departments of the University have their own collections and there are two Faculty libraries, for Education and for Economics and Social Science. The present capacity of the Main Library is about 750,000 books with places for about 660 readers. The Science and Medicine Libraries house about 100,000 volumes and have about 400 reader places. Based upon the student survey which we carried out in the Spring term of 1965, Appendix J Library Use Table J.1 gives the hours spent in all libraries including the City Central Library by University students. This indicates that on the average each student spends 45 minutes a day in a library. The table also shows that three quarters of all the student hours spent in libraries are with the main University collections.

**8.12** From the student response to the survey, details of which are contained in Appendix J Table J.2, it appears that about half of all visits to the libraries were for the purpose of



Figure 8.2    Distribution of laboratories and workshops at the University and Institute, October 1967

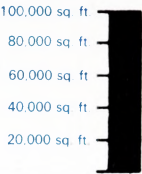
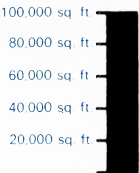


Figure 8.3    Distribution of classrooms and lecture rooms at the University and Institute, October 1967





private study of books taken in. This, together with the considerable use made of the City's Central Library, seems to show a marked shortage of space throughout the University for private study. These results, of course, reflect only student use of these facilities and the use by members of staff must be added to them.

**8.13** It is official University policy to centralise the library service and this means that the departmental libraries will eventually be linked with a messenger service to the Main Library.

**8.14** This policy, combined with what we shall later show to be a much greater urgency for library expansion, has caused us to review the ideas we put forward in the Interim Report that the Library should be sited in the Owens Buildings. The University Librarian has identified a great need for an undergraduate library consisting of an extensive reading room, together with a reserve book stock of something of the order of 40,000 volumes. This would be combined with an issuing service to undergraduates, which they do not have at present, and books borrowed in this way from this stock could be taken anywhere to be read during the day of issue. The Librarian wishes to combine the provision of this new type of library with a new single control point into the Main Library, which would enable the premises to remain open for much longer hours with a minimum of supervision. Lecture rooms for the instruction of students on the use of libraries and seminar rooms where library material can be used are additional accommodation requirements.

**8.15** We have calculated the library need in terms of places for readers and in terms of book storage for the year 1965 and for those years when student numbers will be 8,900, 10,500 and 15,000. We have matched the provision of readers' places in the proposed departmental libraries of new buildings against the demand, and find an increasing shortage of spaces, reaching a deficit of over 1,000 places when student numbers are 10,500. The shortage of spaces, which stands at the present time at something like one sixth of the demand, will rise by then to well over one-third. This seems to support very fully the Librarian's idea that the first requirement in the library is for an undergraduate reading room; this should be included in an early building programme. If University expansion were to continue beyond 10,500 students, there would be a steadily increasing demand for reading room places, requiring ultimately some 1,200 additional places. These would need to be provided by either an extension of the proposed undergraduate library or by incorporating them in the Main Library extension which would be required by then.

**8.16** The Librarian considers that any Main Library extensions should be planned to accommodate 2 million books. This would give an ultimate student/book ratio of 1/133 (see Appendix I). In order that sufficient site area might be reserved at the present time, we have made alternative calculations for an extension to 3 million volumes. The gross floor area of new buildings to accommodate this amount of extension will be 175,000 sq. ft. in the first instance to house 2 million volumes, with a further extension of some 87,000 sq. ft. to take the figure to 3 million volumes. The library building programme, therefore, consists of three main components:

i. The Undergraduate Reading Room. A small building of about 30,000 sq. ft. should be built on the north-east corner of the existing Library with a frontage onto Burlington Street, the main reading room being at first floor level looking south into Lime Grove and covering the service entrance arrangements next to the Refectory. The main entrance would be at ground level off both Lime Grove and Burlington Street and another entrance would be off the Refectory concourse. The main entrance to the Library would be

formed by a similar concourse at ground level beneath the Undergraduate Reading Room, and this ultimately would straddle a north-south pedestrian route running through the entire Arts side of the University. This concourse could be used as an exhibition room and toilets would be located there. This project should be considered as soon as funds are available.

ii. First Extension of the Main Library. This extension would be towards the north, and before a start can be made it will be necessary to clear away the Robinson Laboratories and preferably also the Lapworth Laboratories. Burlington Street, by then, will have ceased to be a through road and will be a cul-de-sac off Oxford Road. A building of the requisite capacity need be no higher than the present Main Library. Part of its function would be to complete the circulation pattern in the Library as it exists at present, and the complete development would facilitate the supervision from a single control point of all three major library elements – the existing Main Library, the undergraduate reading room and the Library extension area.

iii. Further extension of the Library. This extension, again to the north towards the old Medical School site, would increase the capacity of the Library from 2 million to 3 million volumes.

**8.17** The additional studies we had made into the use of the Owens Building for library purposes as suggested in the Interim Report showed considerable promise. On the other hand there are two distinct advantages in the new proposals. The first is that the urgent needs for library development do not have to wait until the functions in the Owens Building have been reaccommodated elsewhere; the second is that the investment made in the Main Library continues to be used to the fullest extent.

#### Administration

**8.18** The administrative offices are in the original Owens Building at present. The location is a good one being right at the heart of the University. As the remaining teaching departments are moved into new buildings, the space they will vacate in the Main Building, and in those parts of the old Chemistry building which were built at the same time, should be able to accommodate the required expansion of the administration. While the spaces in these buildings are far from ideal for modern office practice, they are capable of adaptation. We recommend that as and when further expansion of the administration is required, a greater amount of expenditure should be devoted to the conversion in order to bring the whole of the office space up to the best modern standards.

**8.19** The continuation of this use would preserve the historic core of Owens, with the Whitworth Hall and the Council Chamber retained as important elements in the social and ceremonial life of the University.

#### Dining, Social and Ceremonial Space

**8.20** The University's Refectory is equipped to serve approximately 6,000 meals at lunch time on the basis of 2½ sittings and has kitchen capacity for 7,000 meals. There has been some reduction in use of the Refectory since Owens Park (the University's residential village at Fallowfield) came into use, and the meals served are now estimated at some 55–60% of the capacity. If the percentage of meals taken in the Refectory remained stable, it could be expected to reach full capacity by about 1972. Growth beyond that time would begin to cause congestion and there would be a need then for additional dining space.

**8.21** We propose that extra dining space be provided by extending the building eastwards as a two storey bridge spanning Oxford Road. An additional entrance would be provided at ground floor level on the east side of the road, in such a manner as to allow guests to alight under cover on

formal occasions. We suggest that there should be two levels for dining above the traffic level; the lower one in the form of a large refectory and the upper one an enlarged banquetting room, with a kitchen at the east end which could also serve down to the refectory on the first floor. Kitchen service would be from Dover Street. The building should also be designed to provide, separately from the dining facilities, a safe covered crossing of Oxford Road by means of a pedestrian deck extending along the south front of the Refectory as far as the proposed Library extension.

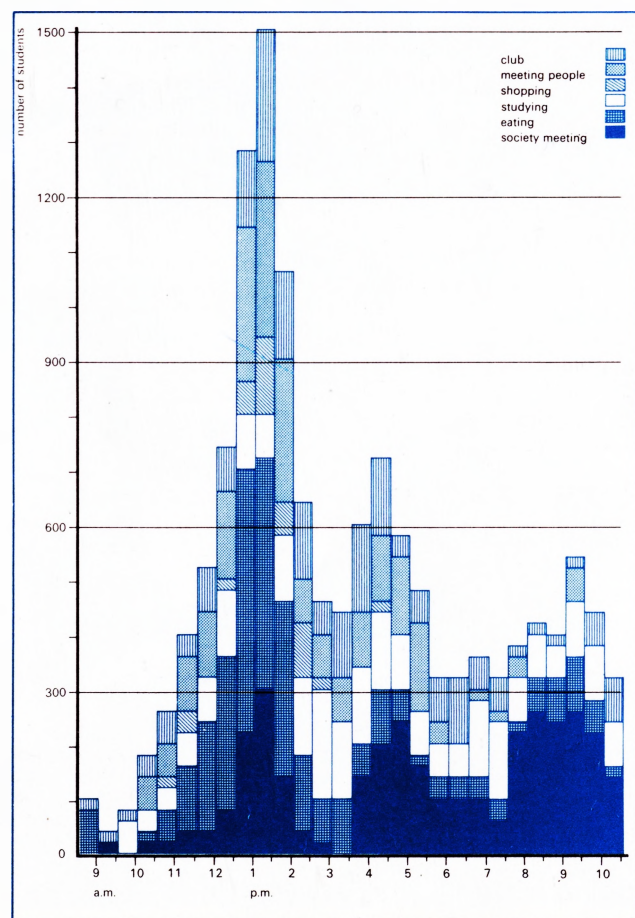
**8.22** The usefulness of this extended Refectory would be greatly enhanced by linking its first floor with the dais level in Whitworth Hall by a bridge. In this way it would be possible to make a spacious and dignified suite of rooms, with excellent views, available for a variety of social and ceremonial occasions.

**8.23** The floor area of the proposed extension would be some 40,000 sq. ft. and this would be capable of supplying the mid-day meal requirements of the University well into the 1980s.

### Student Communal

**8.24** The Student Union building was designed for 4,200 students and completed in 1957. It is now the most intensively used building on the campus with over 2,200 students present at lunchtime on the Monday of survey week. Further student amenity space is planned as part of the extension to the Arts Building now under construction, and this will just maintain the existing space standards for the increased numbers of students by the time it is in commission.

**Figure 8.4** Use of the Student Union on the Thursday of survey week



**8.25** Two significant features of the building's use emerge from the survey (Figure 8.4). One is that for about 13 hours of every day there are between 150 and 200 students using the building for purposes of private study. This appears to lend further support to the Librarian's case for an undergraduate reading room. The other is the high percentage of use by medical students. Whilst being only 9% of the student body, they represent 15–22% of the daily use of the Union and their share of evening use varies between 30% and 60%.

**8.26** It would appear that the provision of new amenity space for medical students and the building of the undergraduate reading room could both relieve the strain on the Union building. Alternatively, it would be equally possible to extend the Student Union at the southerly end by bridging over Spa Street.

### Pedestrian System

**8.27** The physical growth of the University will be outwards from the existing core. It is important that together with each new development a convenient and pleasant network of pedestrian routes is established linking up the related parts of the area. The work that is already being undertaken in the Lime Grove area will become part of the permanent system and it has been designed with this in mind. Generally speaking, the major footpaths south of Bridgeford Street will be at ground level except for the crossings over Oxford Road within the proposed Refectory extension and south of the Student Union.

**8.28** North of Bridgeford Street, in the region of Oxford Road, there will be many advantages in having pedestrian routes at an upper level. There will be two such north/south routes eventually, one to the east and one to the west of Oxford Road and aligned some distance away from the traffic street (Figure 6.4). These will be connected by two cross routes which will link developments on either side of Oxford Road. The first will be located north of the Mathematics Building as part of a major east–west route and the second near Booth Street as part of the Precinct Centre development. The elevation of these routes will lift them clear of the traffic on the streets, will give easy access to more floor levels in the new buildings (including the residences) without the use of lifts, and will make it possible to provide a more intimate scale to the pedestrian spaces themselves.

**8.29** As far as the University development is concerned, these elevated pedestrian streets will be incorporated as part of each building as in the case of the Precinct Centre and the Business School. In this way little extra cost need be involved and the buildings which will span Oxford Road will, at the same time, provide convenient covered points for boarding and alighting from vehicles. In the short term, routes from the perimeter surface car parks will be at ground level. These should similarly be arranged at the upper level when multi-storey car parks are built.

### Regional Computing Centre and Computer Science Building

**8.30** This building, now urgently required, will accommodate both a service centre for the region as well as for the University and a teaching and research department. A network of data links will feed into the computing centre and certain material for processing will be delivered by vehicles. Staff and students from many other teaching departments will visit the building. The centre must also be fully air conditioned. These factors make it desirable and reasonable to site the building on Oxford Road. The proposed location will be immediately north of the Mathematics Building where the computing centre and the teaching and research department will be contiguous with the major science extension area north of the existing Science Area.



**8.31** Part of the building's function in the context of the University plan will be to incorporate one of the main north/south pedestrian routes at a level some twenty feet above the ground and to link up with the ramp system which gives access to the Mathematics Building. The main entrances to both sections of the building will be off this route, which could be used at this level to divide the building clearly into its separate parts.

**Medical School**

**8.32** The site of the Medical School has a frontage to Oxford Road between Ackers Street and Grafton Street, and extends from Oxford Road to the multi-storey car park west of Upper Brook Street. It may be desirable to provide connections between appropriate departments of the School and the Science extension area to the north. Also, it will be important to make provision for ultimate bridge connections incorporating major public footpaths at an upper level over Oxford Road to a new building south of the Student Union and over Grafton Street to the Hospitals. Because of the priority now given to the Medical School it must be planned on the assumption that the Inner Ring Road may be built between it and the Hospitals, but sunk below ground level. (Chapter 5.)

**Metallurgy**

**8.33** We recommend that the Metallurgy Department should be accommodated in the first part of the laboratory and workshop structure north of the Science Area described in **8.10**.

**Economics and Social Science**

**8.34** New accommodation for the Economics and Social Science Department will be required either when the Dover Street Building ceases to be adequate for the growing Faculty, or when the further needs of Biological Sciences or Medicine become pressing. We recommend that it should be located west of Oxford Road between the Precinct Centre and Bridgeford Street. It should be designed so as to extend the upper-level north/south pedestrian route from the Precinct Centre and to connect across Oxford Road with the Computer Science Building. This location would also make possible the provision of links to the Business School.

**Museum**

**8.35** We recommend that when the Manchester Museum extends it should do so to the west, on the site of the Coupland Street buildings.

**Further Development**

**8.36** Further development will be by a process of demolition and replacement of buildings in Coupland Street and to the west of Owens.

## 9 Institute plan





Figure 9.2 Institute area, 1984

0300600

scale in feet

- buildings existing in 1965

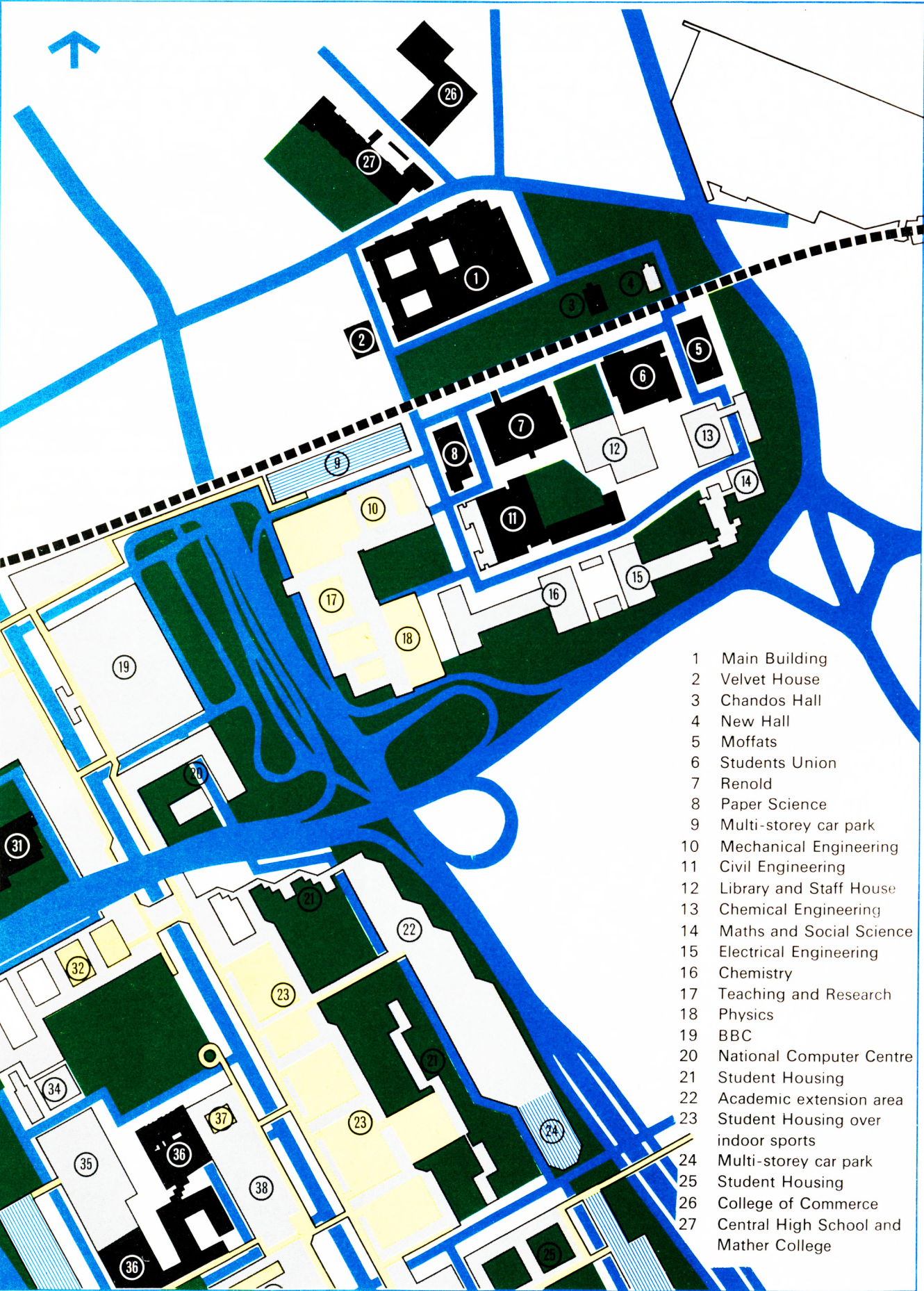
■ grassed and planted areas

■ major roads
- development after 1965

■ upper level pedestrian areas

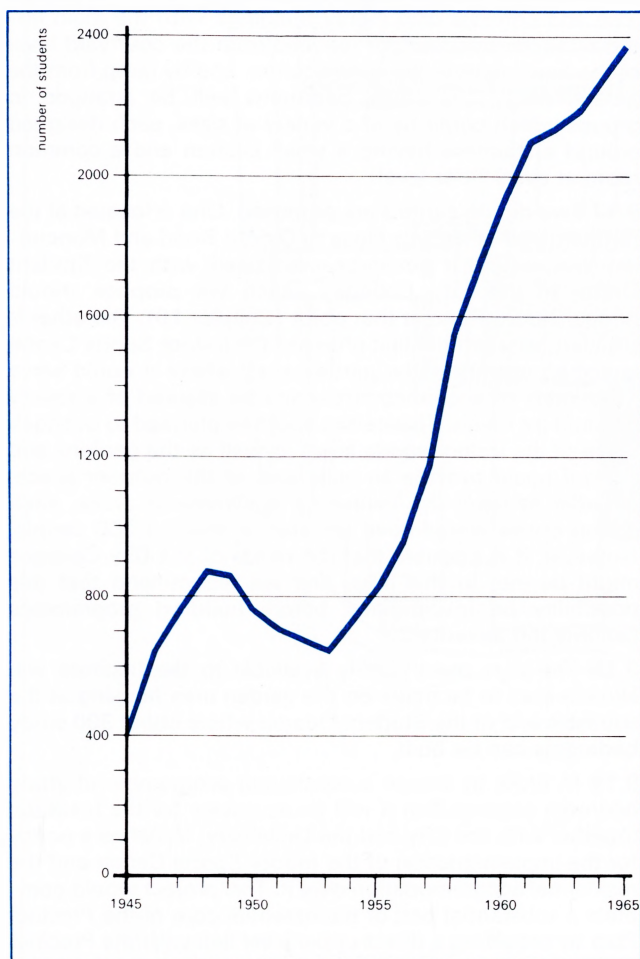
■ service roads
- multi-storey car parks

■ Altrincham railway line





**9.1** Figure 9.1 shows a graph of the numbers of full time students at the Institute of Science and Technology between the years 1945 and 1965. After the reduction in the rate of student intake in the early 1950s, the rate of growth became dynamic until the 1960s when it slowed down again. The latest enrolment figures show a tendency for the growth rate to accelerate once more.



**Figure 9.1** Graph of growth of students at the Institute

**9.2** It is difficult in the light of such a pattern to make any firm predictions as to the number of students who will enrol at the Institute during the late 1960s and early 1970s. Specialist facilities, such as the Institute is providing for teaching and research in technology, will no doubt create their own demand in conjunction with national pressures. These are likely to arise at relatively short notice and it is important for such an establishment to be equipped in terms of space and general facilities to deal with demands for student places, particularly for post graduates, and for urgent research projects which might arise.

#### Areas A and C

**9.3** Figure 9.2 shows the areas of land available to the Institute for its development plans. Area A will be almost completed with the erection of buildings for Chemistry, Chemical Engineering Plant, Electrical Engineering, Mathematics and Social Sciences and the extension of Civil Engineering, all of which are either under construction or about to start. There will then remain the replacement of the old Chemical Engineering Building (Jackson Street Mill).

**9.4** Area C may eventually contain another hall of residence to the east of Chandos Hall. Areas A and C, with Velvet

House, comprise the present Institute campus. The next areas available for expansion are Area B and the Student Quarter.

#### Car Parking

**9.5** In order to start on the construction of Area B it will be necessary for the Institute to make some long term provision for car parking. The demand in 1965 was for about 450 places. Restraints have already been introduced at the Institute and windscreen stickers are required to gain access to the car parks; these are generally withheld from first and second year students.

**9.6** With the Area B site cleared and levelled for car parking there are spaces, including those on Area A, for about 700 cars. Preliminary site works on Area B will not commence until 1969/70 and by that time the remainder of the Area B site, at present occupied by the Dunlop and Nobles factories, might also be cleared. With no further restraints the demand for parking places is likely to increase to 1,000 by 1972. It is clear that either a multi-storey car park will be needed at an early date or that greater restraints will have to be imposed. We have recommended in Chapter 4 that a policy of charging for car parking should be introduced in 1967. This would make clear the real level of demand at the Institute, and the timing of the car park construction could be based on a review of the situation after this date.

**9.7** We have suggested a car park adjacent to the Area B development to hold 900 vehicles. The principal entrance would be at the Charles Street traffic lights in the first instance, to be replaced ultimately by a bridge over Princess Street immediately south of the railway. A secondary entrance would be off Sackville Street. The car park will be so located as to conveniently serve Areas A, B and C and will be the main contribution to a total provision of about 1,130 places, which should be adequate until the late 1970s.

**9.8** We have recommended in Chapter 7 that small kiosk type shops, cafes and public houses should be distributed throughout the length of the Precinct away from the main centres. Such a small group of facilities could well be integrated with the design of the multi-storey car park at its east end on Sackville Street. In this position, they could help to subsidise the car park.

#### Area B

**9.9** We have made general development proposals for Area B based on an approximate analysis of the main types of accommodation required for Mechanical Engineering and Physics. Our investigation showed that, in addition to these requirements, there was space available for either future expansion of these two departments or for a joint teaching and research centre for inter-departmental studies. The proposals shown in Figure 9.3 incorporate several principles upon which we consider future academic space for science and technology should be based. These principles are:

i. the definition of three kinds of space and their assembly in layers:

- workshop areas located on the ground in the form of continuous frames structures. In the case of Area B, these can cover some 144,000 sq. ft. These should be two storeys in height, with the possibility of increase to three in places, and designed to take intermediate floors
- over parts of the workshop structure, and connected to it by staircases and lifts, are located laboratory areas and research rooms. These can be two or three storeys high and arranged around courtyards to provide roof lights to the workshops below. These structures, based on the grid of the workshop area, are intended to be as continuous as possible to permit the maximum flexibility of use
- rising over both these types of space are blocks of



laboratory and teaching accommodation not requiring such close proximity to the workshops, although direct access by lift and stair is possible to certain workshop areas. The classroom and lecture room component of this kind of space should be in the lower floors to allow ready access for large numbers of students from all three zones

- ii. the integration of all three types of structure on the same dimensional planning grid to allow changes to be made to the forms during the detailed design process without invalidating the repetitive nature of the structure
- iii. provision of a basic grid of main services corresponding to the structural grid to ensure flexibility in use
- iv. direct "drive in" access to the workshop areas from service roads
- v. the use of large areas of the workshop roof for recreation and amenity space.

**9.10** The next stage in the development of the Area B project should be the verification of the broad proportions of the three kinds of space and the development of the structural and servicing systems.

#### **Student Quarter**

**9.11** The area known as the Student Quarter was originally conceived by the Institute as a residential area without any academic development in it. More recently it has been thought that a combination of academic and residential accommodation would be a more appropriate use for the site. We have prepared an outline scheme for development of this kind providing some 2,000 study bedrooms in three main forms.

**9.12** South of Mancunian Way, a 12 storey development of south facing study bedrooms is proposed, designed so that all these rooms will be insulated from the motorway noise and the building itself will act as a barrier keeping traffic noise out of the northerly end of the Student Quarter. This building is designed to link across Oxford Road with a similar one overlooking Grosvenor Square. Study bedrooms are arranged in groups of 16, accessible by lifts and stairs (Figure 9.4). The ground floor is designed as a continuous loggia, open to a garden area to the south, providing a covered walkway from Oxford Road to the subway under Upper Brook Street. Common rooms are provided at the upper level which bridges Oxford Road.

**9.13** Along the Oxford Road frontage it is proposed that the study bedrooms should be combined with a structure containing a major Indoor Sports Centre to serve the entire Precinct. Figure 9.5 shows the proposed first phase of this development located at the Booth Street end of the Student Quarter. The sports accommodation would consist of 2 main halls. One would provide for "wet" sports with an Olympic standard swimming pool (capable of subdivision for everyday use), a diving pool with a 10 metre board, an ice rink, and possibly smaller teaching pools. The other would provide for "dry" sports and would contain gymnasia, archery and rifle ranges and smaller rooms for squash, judo, table tennis and other games. Most of this accommodation would be in an enclosed building rising from basement level to 20 feet above the ground, and the main pedestrian approach and entrance would be at roof level.

**9.14** Above the Sports Centre, and using its roof as a raised "ground level", will be groups of study bedrooms on 3 floors surrounding quiet courtyards. The groups can be of varying size, from 6 to 16 rooms, each with a small kitchen and common room overlooking the quadrangle. The approach to each group will be by staircase reached under cover from the raised courtyard. On the north east flank the study bedrooms extend down to the actual ground level, making 5 floors in all, and here they will overlook a garden area.

**9.15** This garden area is planned to extend along the centre of the Student Quarter and will be enclosed to the west by the student housing over the sports centre and to the east by the academic buildings. These structures will keep out a substantial part of the traffic noise on Oxford Road and Upper Brook Street.

**9.16** The third form of student housing is sited in this garden area and consists of 5 storey buildings with the main entrance at the middle floor reached from the courtyard level of the housing over the sports centre, and by ramp from the garden itself. The study bedrooms will be arranged in groups which could be of a variety of sizes, each designed around a staircase having a small kitchen and a common room at every floor level.

**9.17** Two dining centres are proposed. One is located at the northern end of the site close to Oxford Road and Mancunian Way where it could be associated with the Student Union of the City Colleges which we propose should bridge Oxford Road at that point (Chapter 10). The other is situated between the first phase of the Indoor Sports Centre and the housing in the garden area, where it could serve both kinds of accommodation and be assured of a steady demand for meals. This centre could be planned to overlook some of the indoor sports areas as well as the gardens and its roof could provide an extension of the outdoor space. In order to meet the Institute's requirements alone, each dining centre would need to cater for about 1,000 people. However, it is possible that the needs of the City Colleges might be met in this area, and we recommend that this possibility be investigated before building programmes become too advanced.

**9.18** The sites most readily available to the Institute will allow a start to be made on the garden area housing at the southern end of the Student Quarter where about 300 study bedrooms can be built.

**9.19** In order to ensure a continuing programme of study bedroom construction it will be necessary for the Institute, together with the City and the University, to define a policy for the implementation of the Indoor Sports Centre and the residential accommodation over it. This project would complete a substantial part of the essential core of the Precinct Plan by providing a direct upper level link with the Precinct Centre and thence by way of the Churches and the Computer Building to the Mathematics Building and the space in front of Owens.

**9.20** We recommend that as soon as possible parts of the central garden area should be established as a route between the first phase of the student housing and the main Institute campus.

**9.21** The academic buildings on the Student Quarter should be sited along the eastern boundary and should be as continuous as possible (as on Area B) and about 5 storeys high. They could be linked with some general teaching accommodation in the garden area. It is unlikely that these buildings will be commenced before the completion of Area B.

#### **Other Areas**

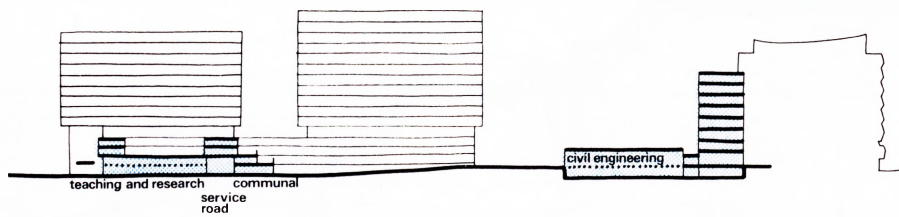
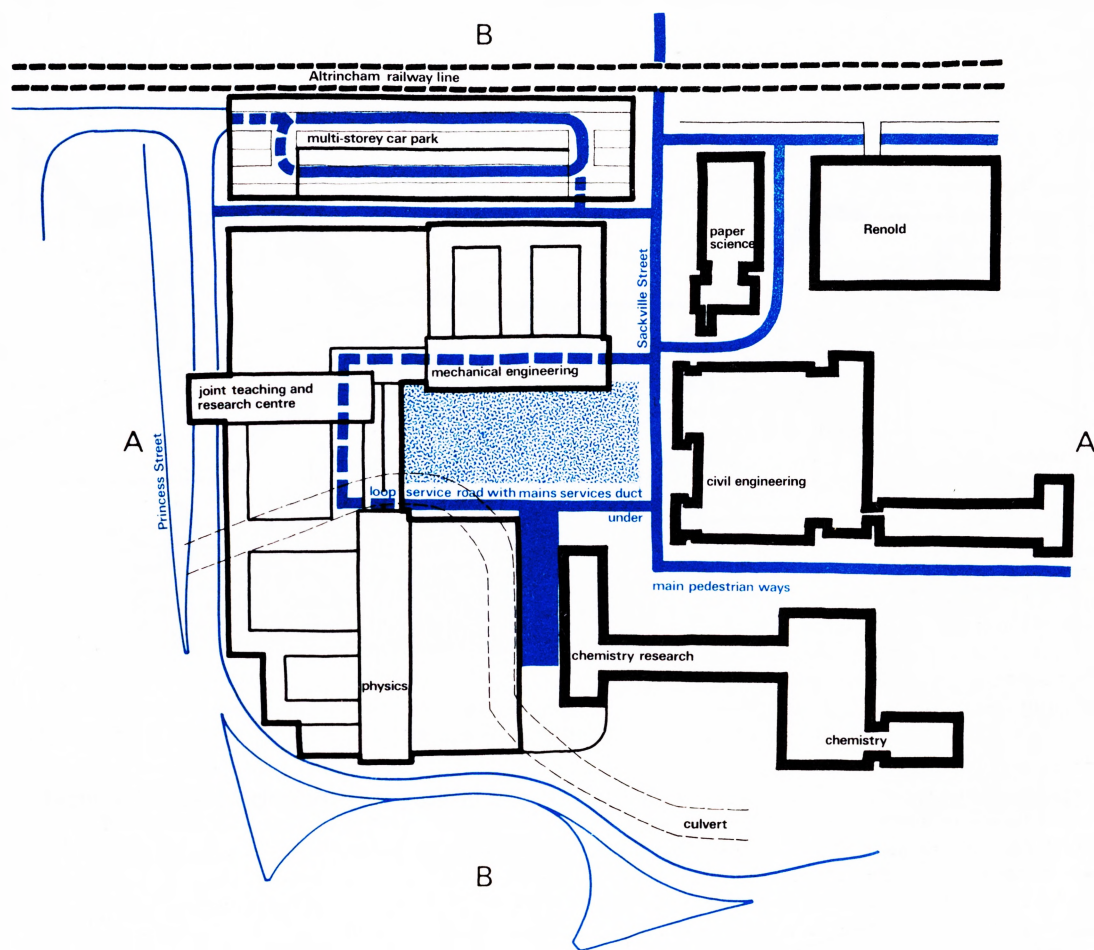
**9.22** The area south of the BBC building which had previously been reserved for the Institute's expansion, has been allocated to the Ministry of Technology for the erection and future expansion of its National Computer Centre. Provision is being made for it to be closely linked by foot-path and by cable to the main Institute campus.

**9.23** The areas surrounding the Main Building, so far not developed by the Institute, seem to us to be one of the logical places for the extension of the Precinct and particularly suitable for the long term academic development of the Institute. We refer in Chapter 3 to the long-term

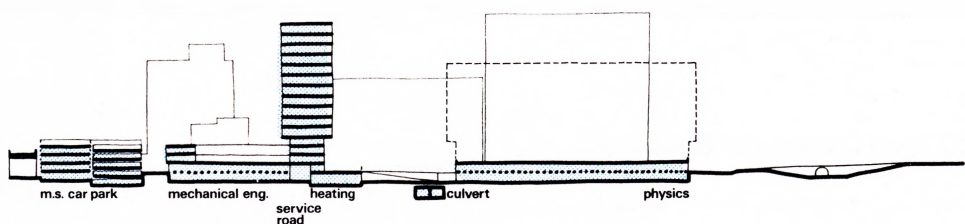
Figure 9.3 Area B proposals



grassed area



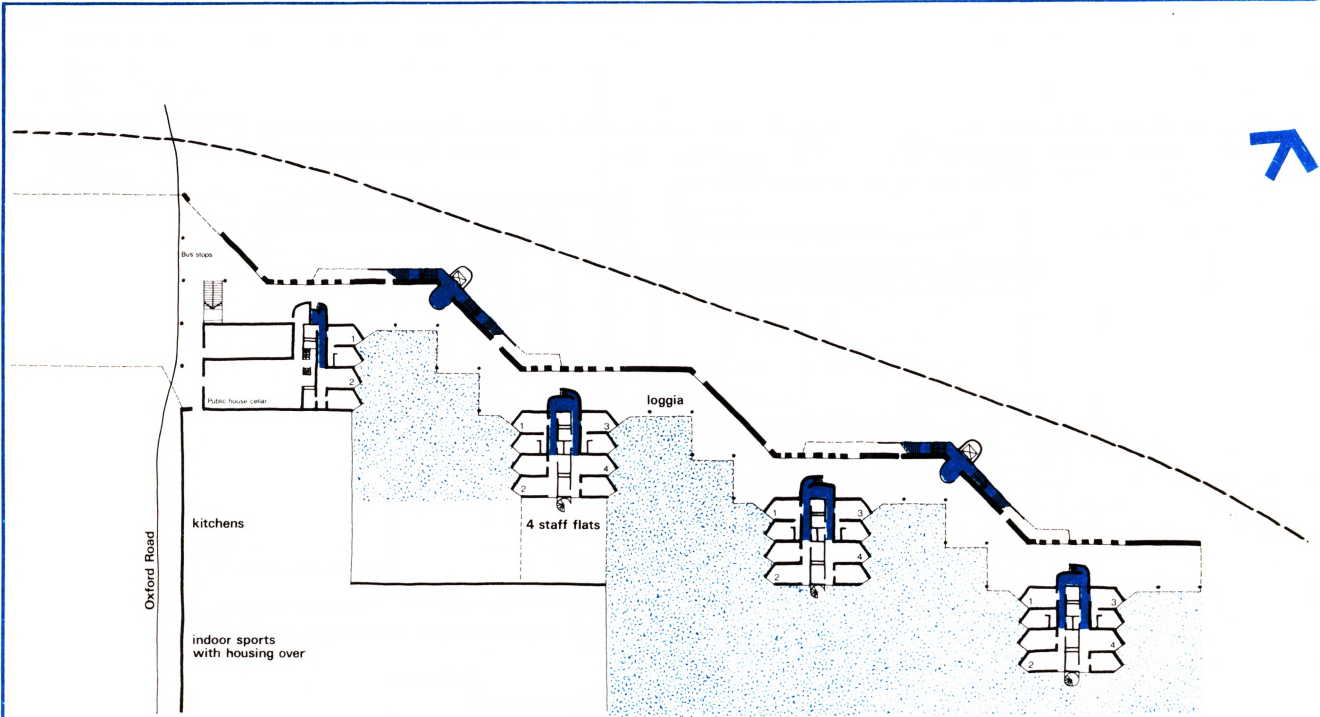
Section AA



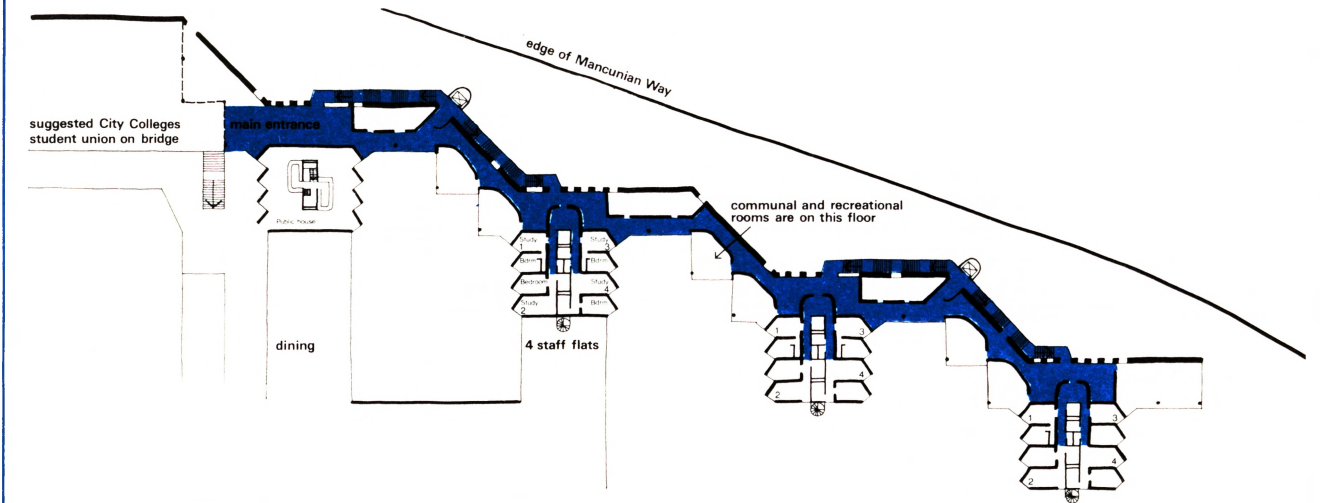
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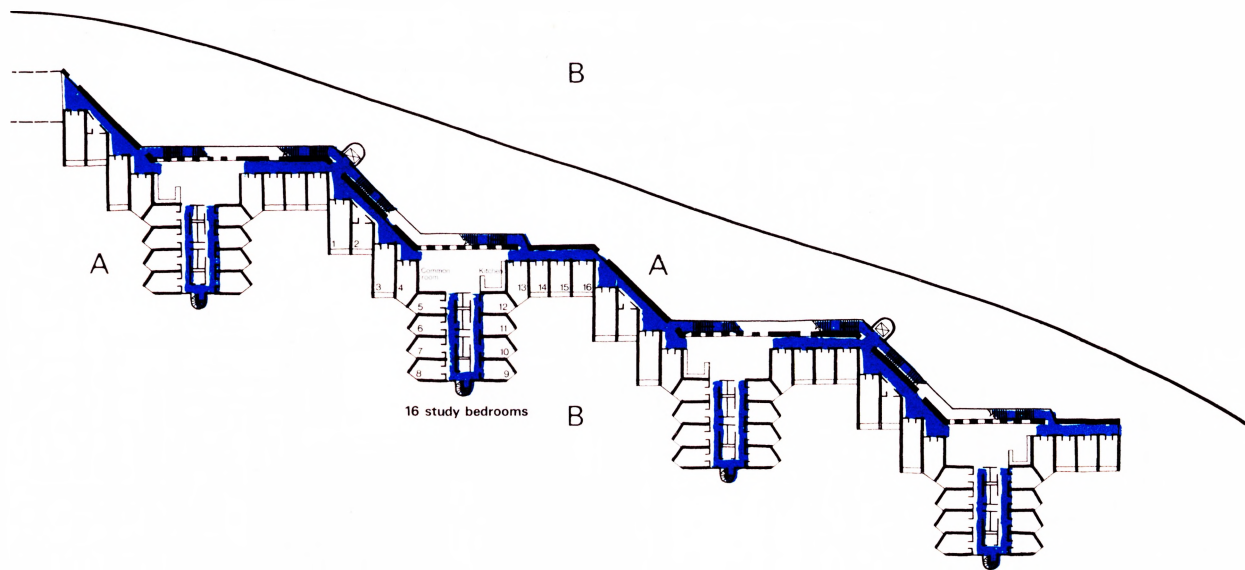
Figure 9.4 Student Quarter, south-facing housing



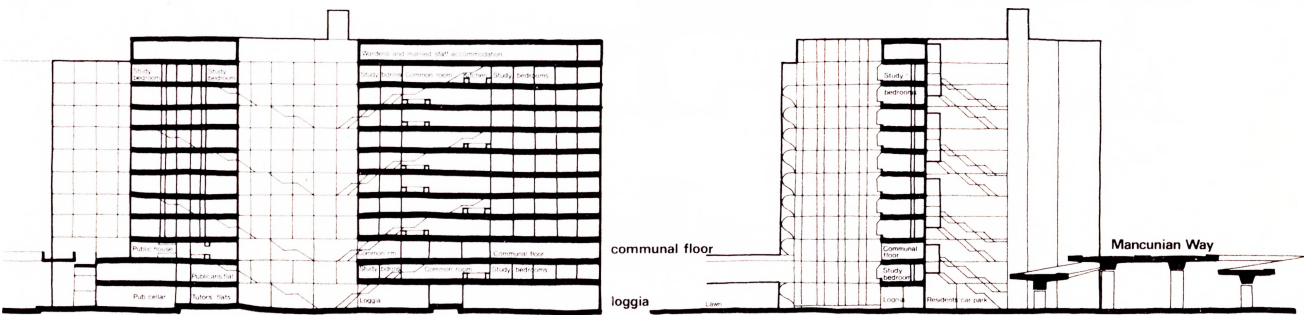
Ground floor



20' level communal floor



Typical study-bedroom floor plan



Section AA

Section BB



Figure 9.5 Student Quarter, indoor sports centre and housing



Upper level pedestrian areas

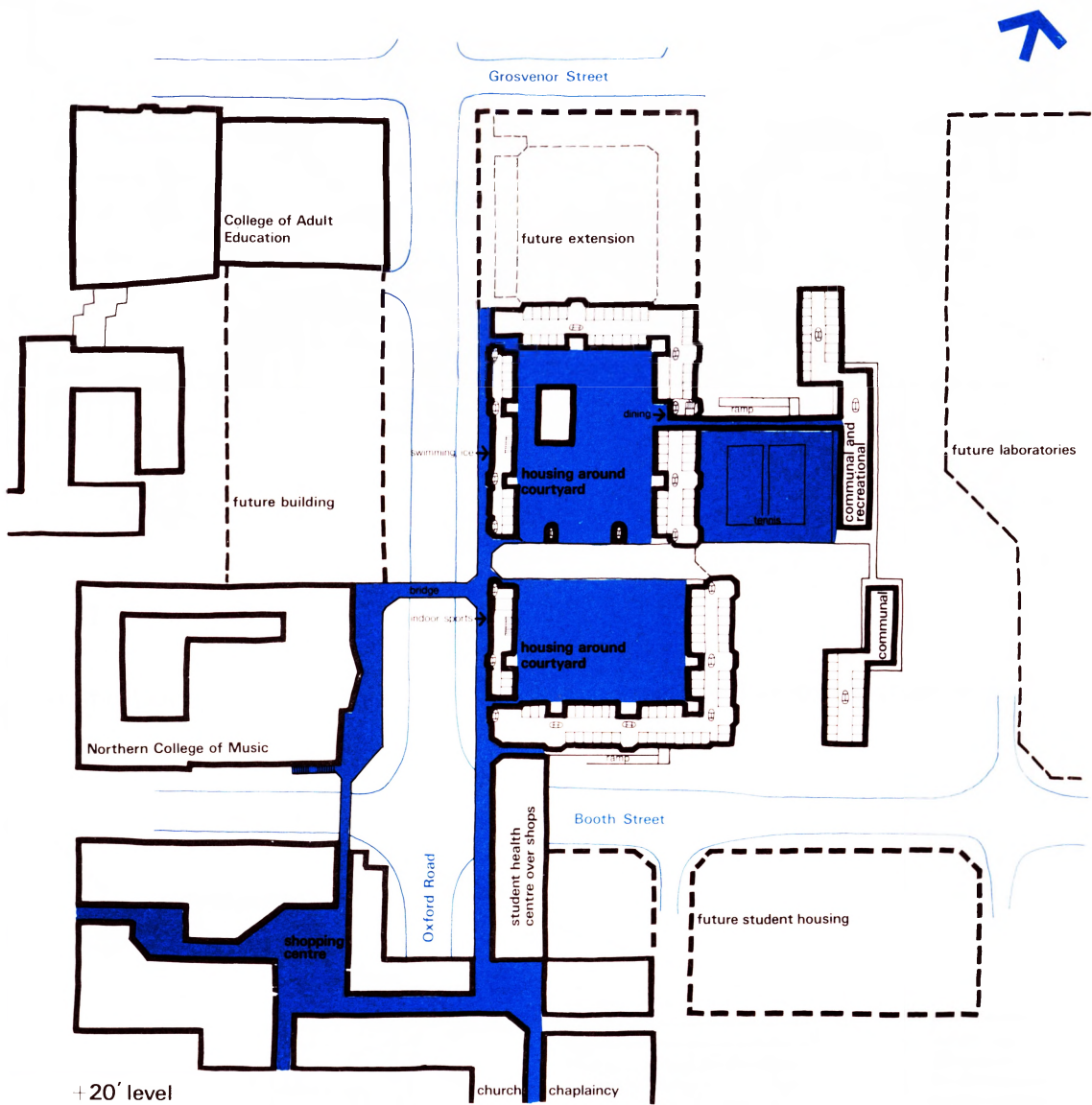
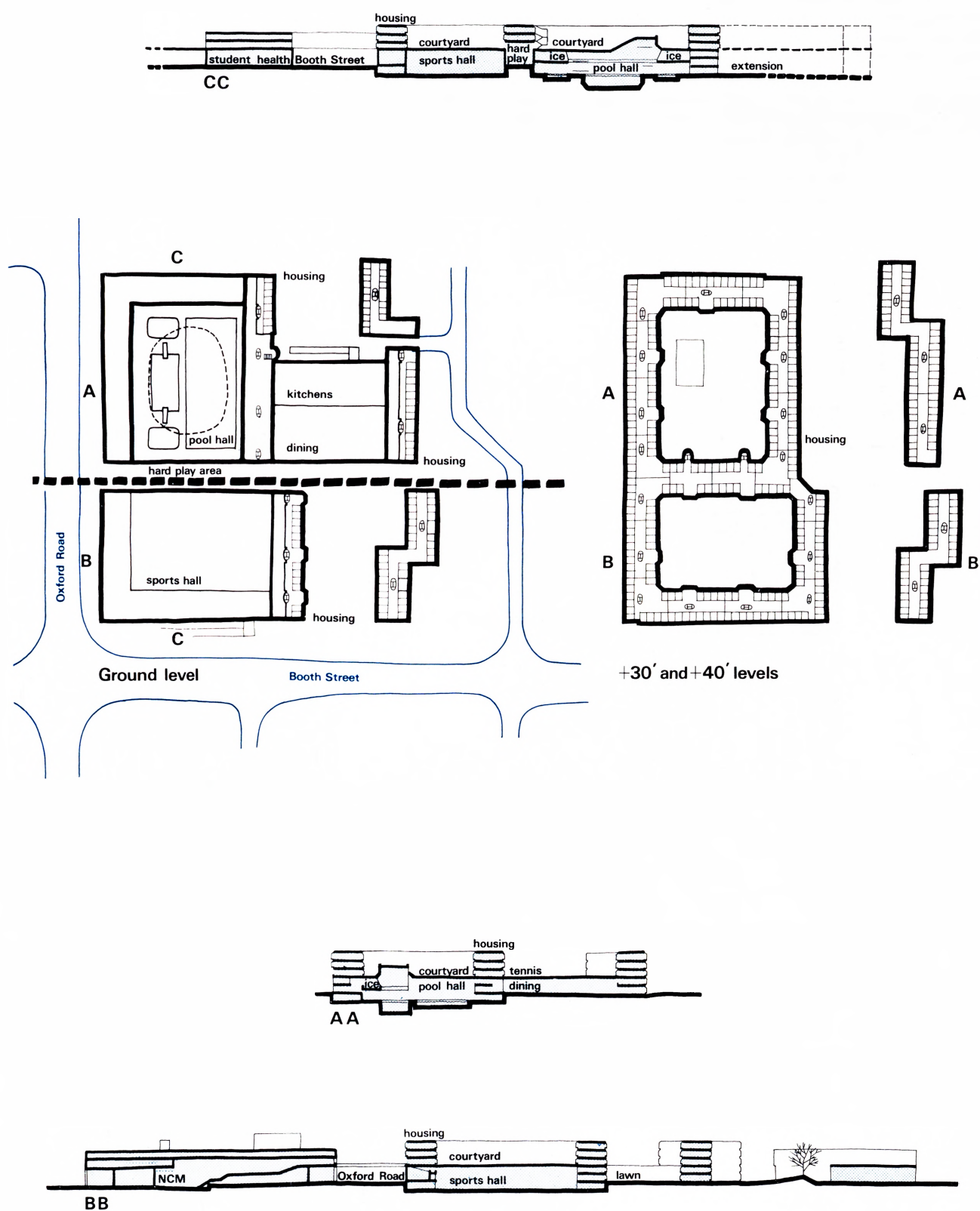


Figure 9.5





extension of the Precinct and recommend that before finally embarking on the construction of academic buildings on the Student Quarter, the Institute should investigate with the City the future availability of land in these areas. If a long term supply of land can be assured, the development of the Student Quarter according to the original conception as an exclusively residential and recreational area would preserve the compactness of the Institute's academic areas. In this event the numbers which could be housed on the Student Quarter could rise substantially. The extra number of study bedrooms might well be required if the total number of students at the Institute is to rise to the region of 7,000. The Precinct Plan, as far as the Institute is concerned, has been framed to be as flexible as possible in order to keep such an issue open until the time comes, probably in the later 1970s, to make a decision.

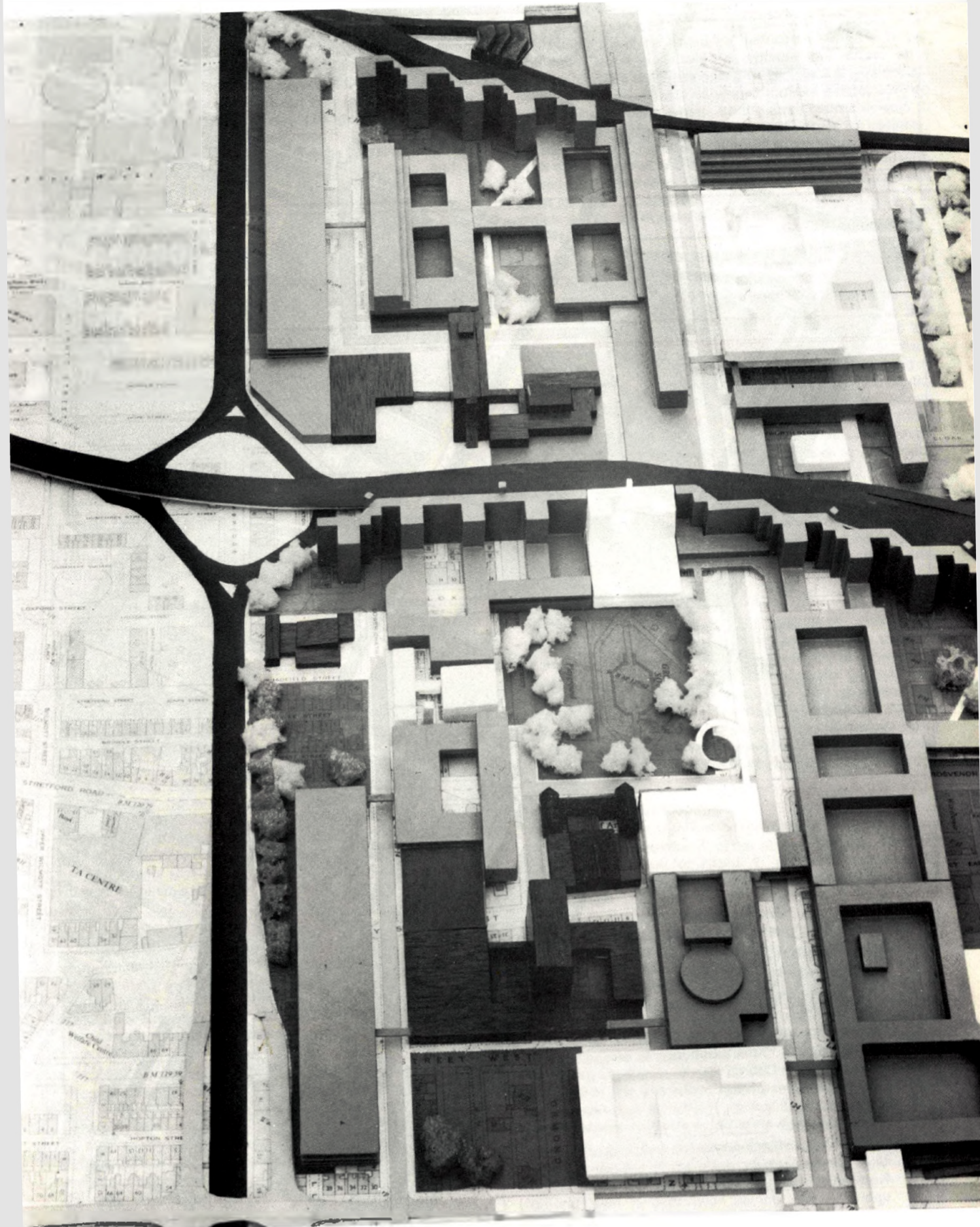
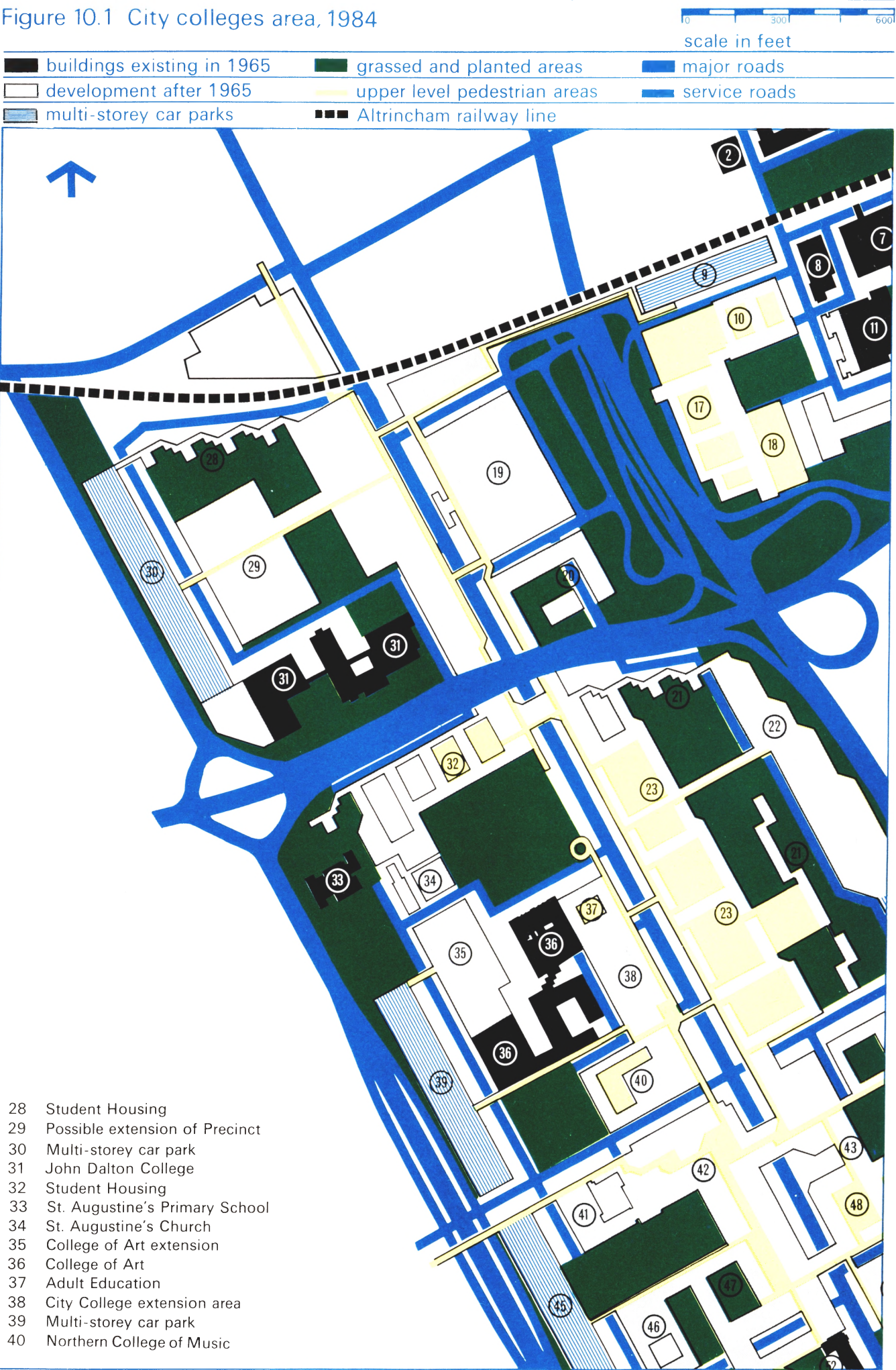




Figure 10.1 City colleges area, 1984



**10.1** Part of the City's Further Education building programme is developing in the area north of Booth Street and west of Oxford Road in the form of separate colleges. On that part of the site south of Mancunian Way there is at present only one college – the Regional College of Art and Design. To the north of Mancunian Way is the John Dalton College of Technology. Three new colleges are proposed: a new Northern College of Music formed by the amalgamation of the Northern School of Music and the Royal Manchester College of Music, an Adult Education College and a Teacher Training College.

**10.2** In addition to these new colleges, the City Education Committee wishes to make provision for a Teachers Centre, a Student Union to be shared by the students of all the City Colleges, a Child Guidance Centre, a Physical Education Centre and office accommodation for two examining bodies (the Union of Lancashire and Cheshire Institutes, and Associated Lancashire Schools Examining Board). The City originally requested that housing provision should be made for between 400 and 500 students in study bedrooms and they have recently increased this figure to 2,500. Permission has now been granted for the building of residential accommodation on the Precinct for about 200 Further Education students.

**10.3** In the student survey we included, in addition to the existing colleges which will ultimately be rehoused in the Precinct, the College of Commerce and its outlying departments, the outlying departments of the Manchester College of Art and Design and the Elizabeth Gaskell College.

**10.4** Within the Precinct the City Colleges area as it has hitherto been defined is very limited. The more recent additions to the programme for the College of Art and Design, the doubling in size of the projected Teachers Training College, the demand for more housing, together with the need for some open space and for car parking, means that more site area will need to be provided.

### Car Parking

**10.5** The student survey has shown that full time students at the John Dalton College and the College of Art have a higher rate of car use than those at the Institute and at the University. The total demand for car parking at the City Colleges within the Precinct, including staff requirements, was for over 700 places. This could grow by 1971/2 to about 2,300. Some measures of restraint will need to be introduced, therefore, as only 600 places can be made available in surface car parks at John Dalton College, under Mancunian Way, and on the site between Cambridge Street, Higher Chatham Street, Booth Street and Cavendish Street set aside in the plan for this purpose.

**10.6** By developing the last site as a multi-storey car park, the total capacity of these areas would increase to approximately 1,900 so that some measure of restraint would still be required. If no multi-storey car park construction is undertaken the surface provision by 1972 would be sufficient only for staff and visitors. It is suggested that such restraints should not be applied until an assessment has been made of their effect on recruitment and the working of the colleges.

**10.7** With the development of the Colleges of Adult Education and Teacher Training and the progressive expansion of the Colleges of Art, Music and Technology, the demand for car parking space would be likely to reach 2,600. This figure represents a lower rate of car use than the 1972 figure to take account of the restraining effect of congested roads. If the true demand were to be supplied, 3,100 places would be required. This would entail the reservation of further land for car parking north of the John Dalton College adjacent to Cambridge Street.

### Northern College of Music

**10.8** Sited north of Booth Street and west of Oxford Road this building will be linked by pedestrian bridge with the Precinct Centre and will incorporate the upper level pedestrian route within its east facade. This will give access to the main foyer space serving the opera house, concert hall and recital room which are the three main elements to which members of the public will have access for performances. The foyer itself will contribute to the visual interest of both the upper level and the street level by linking them with a fine internal staircase. The ground floor of the building will open out onto an open space to be created at the west end which will be overlooked also by the College of Art and the Business School.

### Manchester College of Art and Design

**10.9** The academic plan for this College is being expanded to increase the scope of its courses. It is now likely that despite the latest extension to the College coming into commission, further additions will have to be planned. We recommend that these should be located to the north of the new building, crossing Cavendish Street and continuing to St. Augustine's Church. The extension would include the sites of the Congregational Church, the municipal offices and the present Till and Kennedy building. When these extensions are planned, an appropriate use should be found for the undercroft of the printing machine shop; this space was originally designed to provide car parking at a time when no overall plan for parking in the area was in existence. It is in such a key position in relation to the next extension site and so pleasantly situated, overlooking the open space to the south, that it should be considered as part of the site area in terms of the further building programme.

### John Dalton College

**10.10** It is estimated that there will be a considerable increase in the numbers of full time and part time students in this College and it may well be necessary to extend it. A site has been reserved for some time on the Oxford Road frontage for a residential block for 200 students. We recommend that this should be sited elsewhere and that the John Dalton College should extend when necessary up to Oxford Road. The workshops could also be extended westwards, into the existing surface car park, as far as Cambridge Street.

### Adult Education College

**10.11** It is now an urgent priority to provide accommodation for an Adult Education College in the Precinct. This will consist of facilities for adults to study and practice art, music, drama, physical education and a range of subjects in the arts and sciences. It must be located on bus routes serving as large an area as possible. We propose that it should be erected on the south-east corner of Grosvenor Square with space for expansion southwards. It may well be that certain facilities might be better met in adjacent buildings, such as in the proposed Indoor Sports Centre east of Oxford Road and the branch library in the Precinct Centre. On the other hand, its refectory accommodation might also serve other colleges, such as the College of Art. We suggest that schedules of accommodation for this building should be closely studied in relation to the facilities which are being planned in the immediate surroundings, not only in order to promote their maximum use but also to encourage contact between students of different colleges.

**10.12** The building should be designed to incorporate the northern section of the north/south upper level pedestrian route which will connect by ramp and staircase with the ground level in Grosvenor Square and by bridge to the Indoor Sports Centre across Oxford Road.



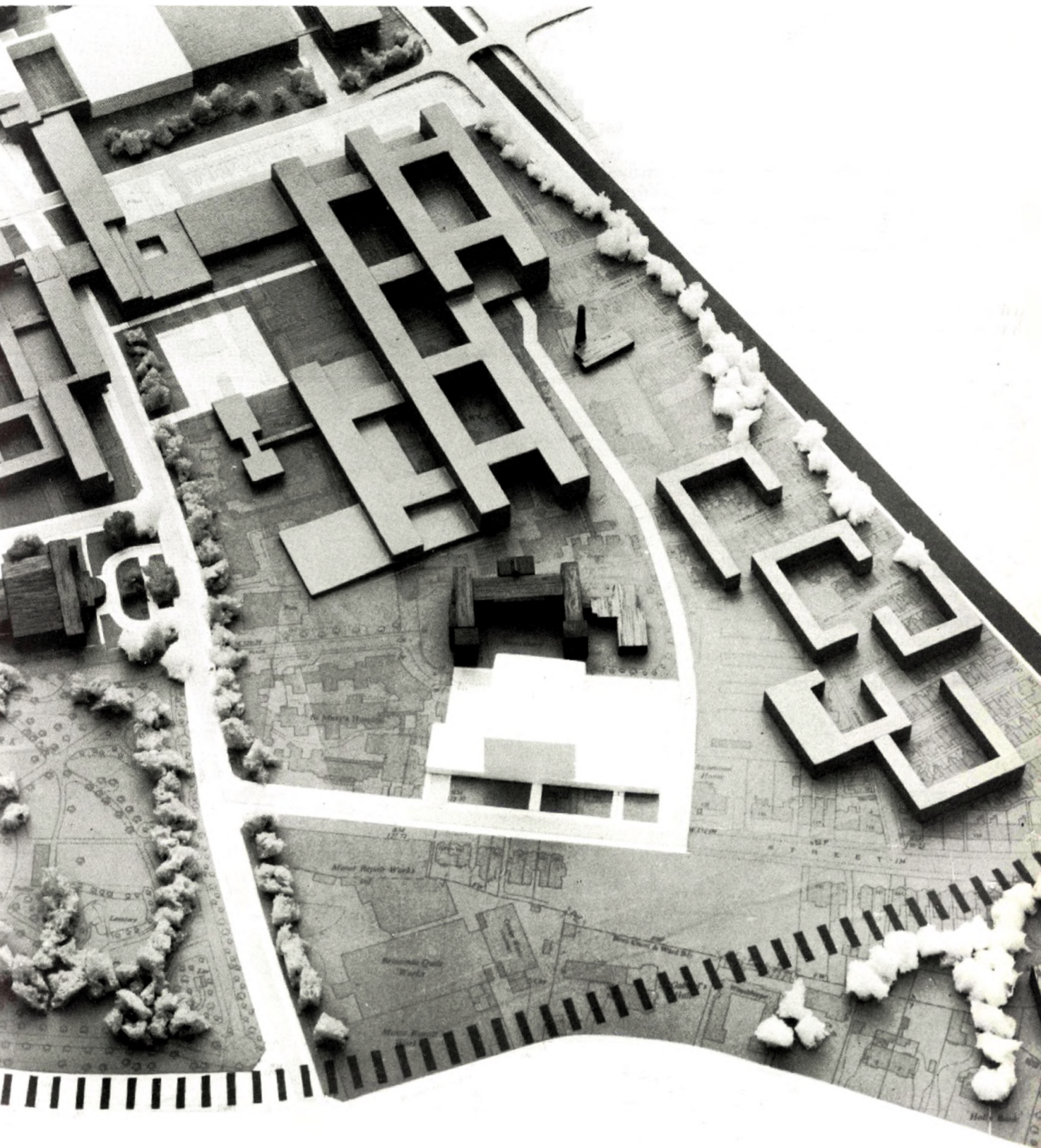
**Teacher Training College**

**10.13** The Department of Education and Science has asked Manchester to establish a teacher training department in the John Dalton College of Technology and the Education Committee has agreed in principle. Outline proposals for a unit growing to over 300 students in three years, beginning in September 1967, have been submitted. It appears, therefore, that the Education Committee's development of teacher training in the Precinct may come about in the first instance by additions to the John Dalton College of Technology.

**Student Housing and other uses**

**10.14** On the completion of Mancunian Way, a site will be available between it and Grosvenor Square capable of providing approximately 640 study bedrooms. We recommend that this building should be developed in the form of a south facing block with a 3 or 4 storey podium to the south. This podium, extended around the north west corner of Grosvenor Square, could contain the offices for the Union of Lancashire and Cheshire Institutes and the Associated Lancashire Schools Examining Board, the Child Guidance Centre and the Teachers Centre. The Student Union for the City Colleges could be located at the eastern end of this podium where it could extend northwards under Mancunian Way and also bridge over Oxford Road to the Student Quarter. We recommend that the first 200 study bedrooms which are now in a building programme should form the first stage of this development and that a joint programme and brief for all the above requirements should be formulated to enable detailed design studies to proceed. We recommend that the Physical Education Centre should be integrated with the Indoor Sports Centre east of Oxford Road.

**10.15** A further similar block of study bedrooms might ultimately be developed south of the Altrincham railway line when that land becomes available. However, these two structures will only provide about one half of the City's stated requirement for student hostel accommodation, and it will be important to allocate these places to students attending the Colleges which are on the Precinct in order to reduce as far as possible the number of daily trips to this part of the city.





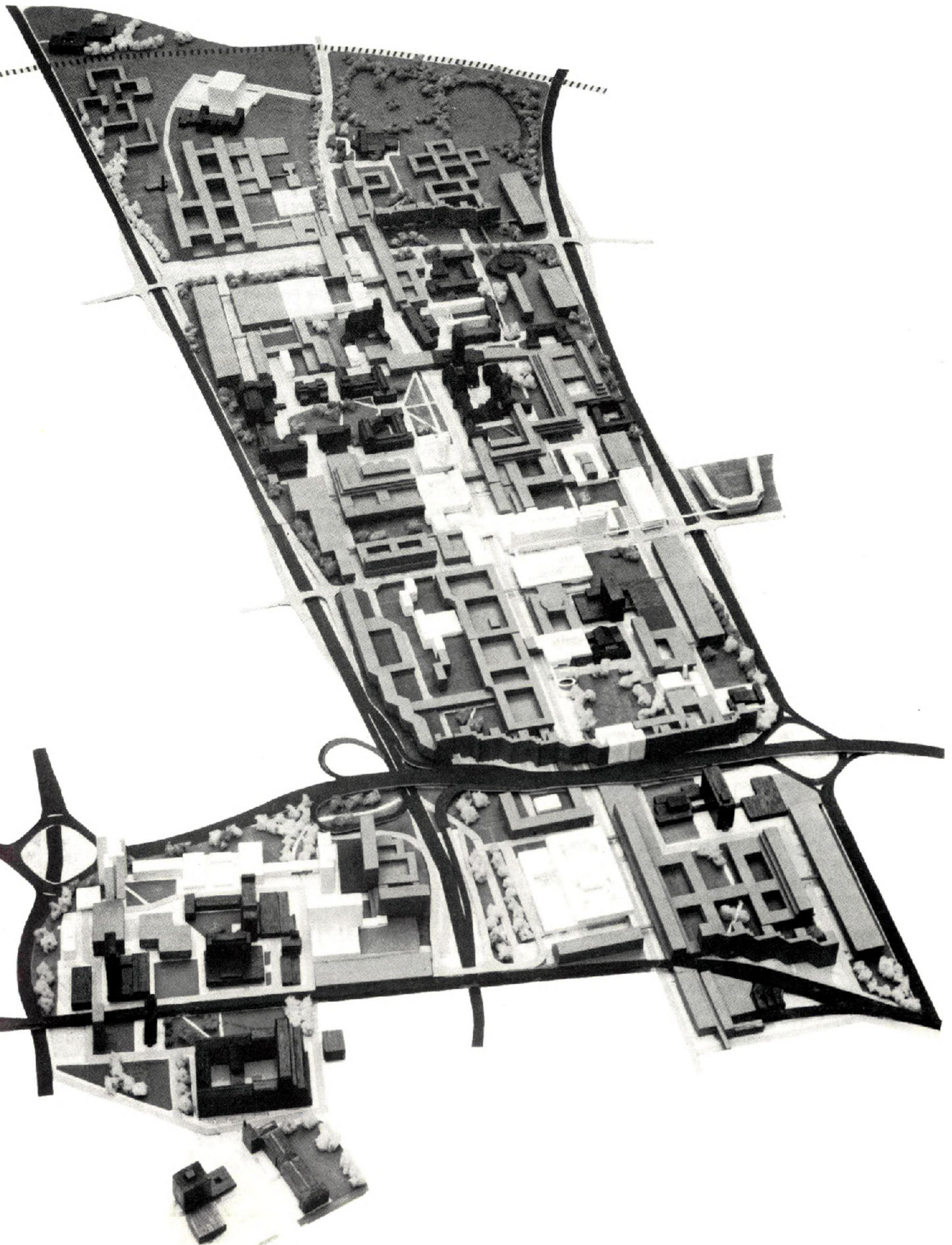
**11.1** The feasibility study carried out by the Hospitals' Consulting Architects has shown that, providing land at present occupied by housing can be made available at the north east corner of the site, a reconstruction programme can be developed which will accommodate the total needs of the Hospitals. The City Council has agreed to rehouse the tenants of these houses to enable a start to be made on the Hospitals building programme.

**11.2** A further area of housing in the south east corner of the site will be required when the Hospitals wish to start their programme of residential building for key members of the resident medical staff, a part of which is included in their first phase plans. When the date of this is known, the Hospitals will need to make an approach to the City Council to see whether similar help can be given in this case.

**11.3** While the area of land available to the University and the Institute for residential accommodation will only be adequate for their own needs, it is hoped that some exchange of residential places will be possible with the Hospitals.

**11.4** If the line of the Inner Ring Road can be moved, a much closer relationship could be planned between the teaching block in the Hospitals' Development Plan and the University Medical School, and there could be attractive possibilities in the way in which the Hospitals' development could be brought into much closer architectural relationship with the University's proposals on the west side of Oxford Road. This would be an appropriate place for a 'bus stop serving the Hospitals' entrance and a building which bridged the road at this point would provide safe covered access from public transport to the Hospitals.

**11.5** To ensure the smooth flow of traffic on Upper Brook Street, the access point to the Hospitals' car parks should be at the junction with Grafton Street, and designed in conjunction with the University's car park to the north.





**12.1** In the preceding chapters we have dealt with the overall planning of the Precinct and with the allocation of space for the various uses. The question of co-ordinating all the developments is no less complex. A site as large as the Precinct containing a variety of old and new buildings, and with extensive areas still to be redeveloped by separate authorities, working under different powers and employing many different architects, presents unique problems of implementation and design co-ordination.

**12.2** The Plan provides a framework of land use and communications and sets out principles to guide development. It is not possible at this stage to formulate a three dimensional envelope which will fix the height and mass of the various buildings to be erected beyond 1971. It was pointed out in the Introduction that the third stage of the planning operation in the Precinct is the study in depth of certain parts of the site within the main framework, a process which has already started in relation to the current building projects.

**12.3** This procedure can be likened to that proposed to the Ministry of Housing and Local Government by the Planning Advisory Group. The present Development Plan, it is suggested, should be replaced by an urban plan, setting out the strategic objectives and by a series of action plans covering the tactical approach to detailed urban design. In the Precinct, the urban plan becomes the framework plan and the action plans are the studies in depth of parts of the site as development becomes imminent.

**12.4** Each architect of a Precinct building when appointed should receive a detailed brief setting out not only the accommodation required but also the planning context of the building. This should provide a clear basis for design without stifling the architect's aspirations, and if it is expressed in reasonable terms it should be acceptable to him as an aid in relating his individual work to the larger context of the Precinct. The essential need is to produce a coherent result without dullness on the one hand or chaotic variety on the other.

**12.5** The planning brief should determine such matters as the access routes for goods, services and people including the levels at which these will be required to operate and the relationship of one building with another, involving perhaps party walls, access between buildings, daylighting and sunlighting.

**12.6** The question of choice of external materials on new buildings in the Precinct is difficult in view of the large number already existing. These include sandstone and limestone, bricks of various sizes and colours and concrete of many textures and shades from white to dark brown. Because of this, we think it is unwise to attempt to stipulate at this stage a fixed range of materials within which architects should work. Over the next ten years building will take place in many different parts of the Precinct. In some locations it will be appropriate to be neighbourly with adjacent buildings in the choice of material. In others, where an extensive amount of new building is to take place, it will be possible to ask for a greater degree of uniformity of materials and finish.

**12.7** The machinery of consultation which has been set up whereby, so far as the Precinct is concerned, these matters are discussed by the Planning Consultant, the City Planning Officer, the City Architect, the officers of the building promoter and the project architect, can ensure that all the aspects of the question of choice of materials can be carefully weighed. The relationship of the building with those surrounding it will be a prime consideration in these discussions. A similar process of consultation is being established to ensure that the basic requirements of the

planning brief are met before formal approvals of project committees and Town Planning sanction are sought.

**12.8** It will remain the province of the individual institution to ensure that implementation matters such as the acquisition of land, the necessary clearance of sites and other site works and the provision of adequate services do not delay building progress. Here too, however, a great deal has been achieved by co-operation between the parties to the Joint Committee.

**12.9** But perhaps the most important element in ensuring the coherence of the Precinct is the treatment of the spaces between the buildings. These must receive special care, not as something left over from the building layout, but as the unifying and continuous network of routes and spaces large and small along which and through which people will pass as they move about in the Precinct. It is not just a matter of planting but of the comprehensive approach to the relationship of surfaces and elements – buildings and pavings, pedestrian routes, roads and car parks, walls and balustrades, steps and ramps, groups and lines of trees, grass and ground cover planting, street and footpath lighting, directional signs, telephone boxes, seats and cycle stores – all the ingredients of the urban scene. A consistent approach to the design of these elements could do more than anything else to reconcile conflicts in design of individual buildings and give an overriding coherence to the whole Precinct.

**12.10** There is another aspect of landscape to be considered. By 1967 there will be extensive areas of cleared land and we recommend that redundant streets should be grubbed up, top soil spread and the areas sown with grass. Some of this land will be permanent open space, other areas will eventually become building sites and at that time substantial quantities of turf would be available for use in other parts of the site. Some sections could be developed as nurseries for shrubs and trees which would be required later on the site and which, meantime, could form an attractive feature of the Precinct.

**12.11** In all this activity, the Joint Committee have a vital role to play in ensuring that the many enterprises that will be required to carry out the redevelopment of the Precinct are properly co-ordinated. We return to our view that this project represents one of the great challenges of urban development at this time. All the elements of the plan are but the means to achieve the desirable end – a total environment which will make the Manchester Education Precinct a good place in which to study, to live and to work.









<b>A</b>	Student survey	<b>76</b>
<b>B</b>	Site capacity calculations	<b>77</b>
<b>C</b>	The pattern of residential accommodation in 1971/2 for students attending the University and the Institute	<b>78</b>
<b>D</b>	Travel to the Precinct (excluding hospitals) and prediction of trip pattern in 1972 and 1984	<b>80</b>
<b>E</b>	Origin and destination traffic survey	<b>87</b>
<b>F</b>	Noise	<b>102</b>
<b>G</b>	Climate	<b>105</b>
<b>H</b>	The total gross floor space required in the Precinct for retail and service trades	<b>106</b>
<b>I</b>	University car parking	<b>111</b>
<b>J</b>	University library use and calculation of future library space requirements	<b>112</b>
<b>K</b>	University midday meals	<b>115</b>
<b>L</b>	Institute car parking	<b>115</b>
<b>M</b>	Institute library use and calculations of future library space requirements	<b>116</b>
<b>N</b>	Institute midday meals	<b>118</b>
<b>O</b>	City colleges car parking	<b>119</b>



E.1	Traffic survey card	87
E.2	Traffic zones	88
E.3	1965 12 hour traffic flows	89
E.4	1965 morning peak hour traffic flows	90
E.5	1965 evening peak hour traffic flows	91
E.6	Numbers of University students travelling during the average day of survey week 1965	93
E.7	Numbers of Institute students travelling during the average day of survey week 1965	93
E.8	Desire line movements in 1972 – terminal	96
E.9	Desire line movements in 1972 – through stopping	96
E.10	Desire line movements in 1972 – through non-stopping	97
E.11	Network diagram for 1972	98
E.12	1972 projected daily traffic flow	99
E.13	1972 projected morning traffic flow	100
E.14	Turning movements and 1972 flows	101
F.1	Noise contours, University and City Colleges areas	103
I.1	Numbers of University students on Precinct during the average day of survey week 1965	111
L.1	Numbers of Institute students on the Precinct during the average day of survey week 1965	115
O.1	Numbers of City College students on the Precinct during the average day of survey week 1965	119



# Appendix A Student survey

**A.1** In order to study the pattern of use of the Precinct, two surveys were carried out – one of students, and one (with the assistance of the University's Education Research Group) of staff at the University and at the Institute of Science and Technology.

**A.2** The student survey was made by distributing questionnaires to 1,183 students comprising a 10% sample; at the University and the Institute, all subjects in all years offered at the time of survey, January, 1965, were represented. The distribution was made by enlisting the help of the students themselves. A similar survey was made at the other participating educational institutions at a later date. In all, there was a response of 51.1% of forms distributed.

**A.3** The student questionnaires included questions on shopping expenditure, type and location of term-time residence, and a half-hour by half-hour timetable for the five weekdays of the survey week which included questions about methods of travel. The response of each student was coded and punched onto thirty cards for mechanical sorting and tabulation.

**A.4** In order to extrapolate from the survey respondents to the student body as a whole, a series of "expansion factors" was computed – for instance, of 598 students at Elizabeth Gaskell College, 43 returned their questionnaires, so that each represented 13.907, and results specifically involving Gaskell students were multiplied by this factor. These factors were computed for individual departments, for undergraduates and for postgraduates in total, at the Institute and University, and for each institution as a whole. In order to study use patterns, it was also necessary to develop similar factors for individual buildings and for entities corresponding to buildings (in the coding system adopted) e.g. 'buses'. This was done by using the day on which the number of man-hours reported coincided most closely with the facility's average amount of daily usage during the week (unless it was Wednesday, the sportsday, which might induce an eccentric pattern of usage) to compute a composite expansion factor from all its users on that day.

**A.5** Certain data was available capable of expansion by more than one factor, leading to some discrepancies in the results. In such cases, the answer would be expected to lie in the area of alternative estimates and would be best approximated by their average.

**A.6** The total response to the survey was large, but it varied from department to department – for instance, out of 220 University economics postgraduate students, only one contributed a usable response. For this reason, as little work as possible was expanded using the departmental factors, and wherever possible, results were taken using broadly based expansion factors. This is also the reason for the use of facility expansion factors, based on the users of a facility rather than on the department or departments that used it.

**A.7** The coding included designations for the following categories, which were repeated on all the cards representing a given reply:

institutions attended  
undergraduate or postgraduate standing  
subject studied  
year of course  
type of lodging  
area of lodging  
vehicle(s) owned  
parking in or out of Manchester

Also for the following, represented on the timetable cards:  
time represented on a card

activity at this time on each of the five days (in five categories)

location of this activity

And for:

means of arrival, and activity and location following it  
means of departure, and activity and location preceding it  
spending on – and off – Precinct in each of eight categories, and in total.

**A.8** The following are general comments upon the survey:

1. The specific analyses reported indicate the function of the survey

2. The advantages of the format:

- i. comprehension of several types of activity in direct correlation
- ii. division of time into specified periods
- iii. the freedom from preconceptions made possible by its flexibility

3. The disadvantages of the format:

- i. some activities reportable under several headings (for instance, the private study of materials taken into a library)
- ii. certain questions ambiguous
- iii. inadequate space for recording building-and-room information, with consequent ambiguity in some replies

4. Some deficiencies in the carrying out of a voluntary survey are to be expected. The ones most common and apparent were:

- i. the omission of building-and-room information
- ii. the improvisation of would-be improvements in the form
- iii. the omission of replies to some questions
- iv. the assumption that, for students not on the Precinct during the survey week, or otherwise in unusual circumstances, no information was desired

5. There were some errors in the key-punching. For future surveys of the same type, the voluntary information demanded should be less, and asked for with reference to a shorter time span. Much of the information could have been obtained from non-voluntary sources, and some of it need not have been based on such large samples.

**A.9** For the purposes for which it was designed, the survey has been adequate, except where either the response (postgraduate economics) or the number of students (undergraduate general linguistics) is small and must be analysed separately. The measure of the usage of some buildings, like the Medical Library, is jeopardised when not taken in conjunction with others; but the studies of residence, of travel, of expenditure, of Student Union use, and of eating, as well as of most studying, we have felt able to accept without reservation.



# Appendix B    Site capacity calculations

**B.1** The purpose of the following calculations is to provide a method for estimating the capacities of the development and redevelopment areas of the University and Institute in terms of student places which can be provided. The calculations involve the following steps:

- i. measurement of the total site areas available
- ii. calculation of the gross floor area which can be built on these sites
- iii. calculation of the number of student places which can be accommodated in the gross floor area

**B.2** In order to arrive at the reasonable gross floor area which can be built on these sites we have used a ratio which we call "development density". We have found that the traditional planning techniques for measuring individual site capacity (i.e. "floor space index" and "plot ratio") are unsuitable for this generalised purpose as they seek to measure individual building plots without taking into account the benefits of surrounding open space. As it is impossible to define precise building plots throughout the Precinct at this stage, we feel that it is important to employ a ratio which is likely to safeguard the dual requirements of economical use of land and adequate provision of open space.

**B.3** The "development density" is the ratio between the gross floor area in buildings and the area of the site measured to the centre line of streets within the Precinct, the improvement lines on the new major roads bounding the site, to include half the open space where this forms a boundary to the site and the whole of the open spaces within the site.

**B.4** In order to determine a reasonable figure for this ratio we examined two areas which will soon be complete entities, the University Science Area and the Institute Area A.

**a. University Science Area**

$$\begin{array}{lcl} \text{gross floor area of buildings} & = & \frac{881,978 \text{ sq. ft.}}{588,060 \text{ sq. ft.}} \\ \text{site area} & & \\ & = & 1.5 \text{ development density} \end{array}$$

**b. Institute Area A**

$$\begin{array}{lcl} \text{gross floor area of buildings} & = & \frac{1,043,676 \text{ sq. ft.}}{731,808 \text{ sq. ft.}} \\ \text{site area} & & \\ & = & 1.4 \text{ development density.} \end{array}$$

**B.5** From design studies we have carried out for various areas of the Precinct we have concluded that it would be reasonable to achieve a "development density" of 2.0 in new areas of development. This higher density is primarily achieved by the use of contiguous buildings and also by the introduction of open spaces at upper levels. The two areas set out below serve as illustrations of the kind of building form and open space pattern which can arise from the application of these principles.

**a. Extension area between Owens and Booth Street**  
(part already planned in outline)

$$\begin{array}{lcl} \text{Architecture and Town Planning} & 103,700 \text{ sq. ft.} & \\ \text{Business School (including} & & \\ \text{car parking)} & 172,368 \text{ sq. ft.} & \\ \text{Precinct Centre (including} & & \\ \text{residential)} & 243,123 \text{ sq. ft.} & \\ \text{gross floor area of buildings} & = & \frac{519,191 \text{ sq. ft.}}{243,936 \text{ sq. ft.}} \\ \text{site area} & & \\ & = & 2.1 \text{ development density} \end{array}$$

**b. Institute Area B**

$$\begin{array}{lcl} \text{Accommodation for Mechanical Engineering, Physics,} & & \\ \text{Joint Teaching and Research and Communal} & & \\ \text{gross floor area} & = & \frac{666,000 \text{ sq. ft.}}{269,278 \text{ sq. ft.}} \\ \text{site area (excluding car park area)} & & \\ & = & 2.5 \text{ development density} \end{array}$$

The higher density of Area B is due to the need for large uninterrupted areas of laboratory and workshop space

which cover a large proportion of the site but which provide a considerable area of compensating open space at roof level. This indicates that a higher density might be achieved in science extension areas but as a general rule we believe that a "development density" of 2.0 is a reasonable guide and this has been applied to the remaining areas and forms the basis of tables 3.3 and 3.4 in Chapter 3 of the Report.



# Appendix C The pattern of residential accommodation in 1971/2 for students attending the University and the Institute

**C.1** The varying pattern of the types of residence used by students attending the University and the Institute during recent sessions serves to illustrate the need to provide a range of assumptions when forecasting the 1971/2 pattern of student residence. Table C.1 shows the residence of students during recent sessions.

**C.2** Many possible assumptions can be made about the future student residential pattern; those given in table C.2, however, are based upon past trends and future feasibility, and take into account the possible effects of changes in official policy regarding the financing of student hostels.

**C.3** In the case of student hostels, the most probable assumptions are taken to be:

- i. that there will be no further construction of student hostels
- ii. that there will be a feasible rate of hostel construction based upon the foreseeable availability of finance and sites
- iii. that the maximum building rate will be based upon achieving and maintaining the accommodation in hostels of 40% of the total numbers of students.

**C.4** For the numbers of students in lodgings the following assumptions are taken to apply:

- i. the numbers of students in lodgings will be the same as in the 1965/6 academic session
- ii. the proportion of the total numbers of students who will be in lodgings is taken to be the same as that for the 1965/6 session
- iii. the proportion of the total numbers of students who will live at home will be the same as that for the 1965/6 session.

**C.5** By taking one of the assumptions from each of two of the three types of student residential accommodation outlined above for 1971/2, it is possible to assess the effects upon the third. The results of considering every possible combination of the above assumptions are shown in table C.3.

**C.6** From these figures, it is possible to forecast such things as the required building rate for student hostels, the provision of additional lodging accommodation (at a time when redevelopment operations could effectively reduce the amount of potential lodging accommodation available to students) and the general implications for both public and private transport. This latter will, of course, have direct repercussions in the future need for roads, car parks and the possible working hours of the University and the Institute.

**C.7** From table C.3 it can be seen that the annual building rate of student hostel accommodation might range between zero and 300 places. Approximately at the mid-point of this range lies the "feasible rate".

**C.8** The increase in lodging accommodation required by students in 1971/2 from the same table also ranges between zero and 300 places per annum. Whilst it might be thought difficult to increase the lodgings accommodation within easy reach of the Precinct, it could happen that such accommodation might be provided eventually in the re-developed housing areas.

**C.9** The numerical change per annum in the numbers of students living at home might range between an actual decrease of 115 to an increase of 348 per annum. Whilst a decrease in the numbers of students living at home would imply a large increase in student hostel and lodging accommodation, the increased load on public and private transport brought about by the overall increase of 2,085 between 1965/6 and 1971/2, could well prove to be rather high in the context of the overall transportation needs of the Manchester region by the early 1970s.

**C.10** In the light of the above, assumption F of table C.3 appears to be the "best estimate". This assumption would entail the construction of an additional 164 student hostel places per annum up to 1971/2. Also by 1971/2, an addi-

tional 136 student places in lodgings would be required each year. For those students living at home, the increase up to 1971/2 would be approximately 283 on the figure of 1,669 in 1965/6.



Type of residence	1963–64		Session 1964–5		1965–6	
	numbers	% of total	numbers	% of total	numbers	% of total
Hostels	1,948	23	2,799	30	3,201*	32
Lodgings	4,944	60	4,555	49	5,245†	52
Home	1,420	17	1,879	21	1,669	16
Totals	8,312	100	9,233	100	10,115*	100

**Table C.1**  
Residence of students at the University and the Institute

\*end of session  
†Michaelmas term.

Area	Numbers	Proportion of total students	Total students 1964–5 session
North-West region	3,125	34%	9,233
Within a radius of 30 miles of Precinct	2,650 (approx)	29%	9,233

**Table C.2**  
Home residence of students at the University and the Institute 1964–5.

				Changes in the place of residence of students between 1965–66 and 1971–72 sessions					
Estimated total students* 1971–72	Estimated numbers of students			Numbers in hostels		Numbers in lodgings		Numbers at home	
	in hostels	in lodgings	at home	absolute change	per annum	absolute change	per annum	absolute change	per annum
A 12,200	3,201	5,245	3,754	0	0	0	0	2,085	348
B 12,200	3,201	6,344	2,655	0	0	1,099	183	986	164
C 12,200	3,201	7,047	1,952	0	0	1,802	300	283	47
D 12,200	4,187	5,245	2,568	986	164	0	0	899	150
E 12,200	4,187	6,344	1,669	986	164	1,099	183	0	0
F 12,200	4,187	6,061	1,952	986	164	816	136	283	47
G 12,200	4,880	5,245	2,075	1,679	280	0	0	406	68
H 12,200	4,880	6,344	976	1,679	280	1,099	183	– 693	– 115
I 12,200	4,880	5,368	1,952	1,679	280	123	20	283	47
J 12,200	5,003	5,245	1,952	1,802	300	0	0	283	47
K 12,200	3,904	6,344	1,952	703	117	1,099	183	283	47

**Table C.3**  
Place of residence of students attending the University and the Institute for the 1971–72 session.

\*see table C.4 for list of assumptions.

**Table C.4**  
Residence of students attending the University and the Institute for the 1971–72 session.

Assumptions	Students in hostels	Students in lodgings	Students at home
A	No further building	Numbers same as in 1965–66	Remainder
B	No further building	52% of total (same proportion as in 1965–66)	Remainder
C	No further building	Remainder	16% of total (same proportion as in 1965–66)
D	Construction at the “feasible rate”	Numbers same as in 1965–66	Remainder
E	Construction at the “feasible rate”	52% of total (same as in 1965–66)	Remainder
F	Construction at the “feasible rate”	Remainder	16% of total (same proportion as in 1965–66)
G	40% of total (maximum building rate)	Numbers same as in 1965–66	Remainder
H	40% of total (maximum building rate)	52% of total (same proportion as in 1965–66)	Remainder
I	40% of total (maximum building rate)	Remainder	16% of total (same proportion as in 1965–66)
J	Remainder	Numbers same as in 1965–66	16% of total (same proportion as in 1965–66)
K	Remainder	52% of total (same proportion as in 1965–66)	16% of total (same proportion as in 1965–66)



# Appendix D    Travel to the precinct (excluding hospitals) and prediction of trip pattern in 1972 and 1984

	Full time students	Part time students	Academic staff	Other staff	Total
University	6,642	—	879	1,709	9,230
Institute	2,321	—	323	992	3,636
John Dalton	99	475	133	73	780
Northern School of Music	220	72	35	8	335
Manchester Royal College of Music	450	—	60	8	518
College of Art	660	240	150	62	1,112
Commerce	900	336	170	35	1,441
Elizabeth Gaskell	598	—	64	58	720
	11,890	1,123	1,814	2,945	17,772

**Table D.1**  
Details of the population in 1965.

	Full time students	Part time students	Academic staff	Other staff	Total
University	8,800	—	1,164	2,200	12,164
Institute	3,400	—	459	1,453	5,312
John Dalton	500	800	301	165	1,766
Northern College of Music	500	—	100	20	620
College of Art	1,000	200	200	83	1,483
Commerce	1,500	600	289	59	2,448
Elizabeth Gaskell	850	—	91	82	1,023
Adult Education	—	725	85	40	850
	16,550	2,325	2,689	4,102	25,666

**Table D.2**  
Estimated population in 1972 (assuming that staff:student ratios will be maintained).

	Full time students	Part time students	Academic staff	Other staff	Total
University	13,730	—	2,288	3,432	19,450
Institute	5,500	—	916	1,375	7,791
John Dalton	500	800	300	165	1,765
Northern College of Music	600	—	100	20	720
College of Art	1,000	500	250	100	1,850
Commerce	1,500	600	300	60	2,460
Elizabeth Gaskell	850	—	91	82	1,023
Adult Education	—	725	85	40	850
Teacher training	1,000	—	111	50	1,161
	24,680	2,625	4,441	5,324	37,070

**Table D.3**  
Estimated population in 1984 (on the same basis as D.2).

**D.1** The student survey carried out in February 1965 gave information on the mode of travel of students. The survey of members of the academic staff, carried out with the help of the University's Education Research Group, gave details of staff travel at the University and the Institute. Teaching staff at the City Colleges have been assumed to have a similar

percentage of car use. We have assumed part time staff travel to the Precinct to be one day per week on the average. Other staff have been assumed to use cars according to the Manchester average and to carry passengers at the rate of 0.5 per car.

**Table D.4**  
Mode of travel to the University on the average day of the survey week, 1965.

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	8.62	573	55.37	488		171	1,232
Passenger	5.17	344	1.15	9		85	438
Public transport	50.01	3,326	38.18	334		1,282	4,942
Motor cycle	4.72	314	0.33	4		—	318
Cycle	3.07	204	2.47	22		171	1,600
On foot	17.78	1,181	2.47	22			
	89.37	5,942		879		1,709	8,530



	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	11.28	253	31.25	101	10.0	99	453
Passenger	10.94	246	—	—	5.0	49	295
Public transport	59.49	1,335	62.25	201	75.0	745	2,281
Motor cycle	5.30	119	2.5	8	—	—	127
Cycle	7.01	157	2.5	8	—	—	—
On foot	5.98	134	1.5	5	10.0	99	403
		2,244		323		992	3,559

**Table D.5**  
Mode of travel to the Institute on the average day of the survey  
week 1965

	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	%	numbers	
Car driver	44.45	44	50.00	237	50	66	10	7	354
Passenger	11.10	11	12.50	59	—	—	5	4	74
Public transport	33.35	33	37.50	118	50	67	85	62	280
Motor cycle	—	—	—	61	—	—	—	—	61
Cycle	—	—	—	—	—	—	—	—	—
On foot	11.10	11	—	—	—	—	—	—	11
		99		475		133		73	780

**Table D.6**  
Mode of travel to the John Dalton College 1965 (evening students  
not included).

	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	%	numbers	
Car driver	18.18	40	16.66	12	50	17	10	1	70
Passenger	—	—	—	—	—	—	—	—	—
Public transport	72.72	160	74.99	54	50	18	90	7	239
Motor cycle	9.09	20	8.33	6	—	—	—	—	26
Cycle	—	—	—	—	—	—	—	—	—
		220		72		35		8	335

**Table D.7**  
Mode of travel to the Northern School of Music 1965

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	4.66	21	50	30	10	1	52
Passenger	14.00	63	—	—	—	—	63
Public transport	51.33	231	50	30	90	7	268
Motor cycle	4.66	21	—	—	—	—	21
Cycle	—	—	—	—	—	—	—
On foot	4.66	21	—	—	—	—	21
	79.31	357	—	60	—	8	425

**Table D.8**  
Mode of travel to the Manchester Royal College of Music 1965.

**Table D.9**  
Mode of travel to the College of Art 1965.

	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	%	numbers	
Car driver	30	198	30	72	50	75	10	6	351
Passenger	—	—	—	—	—	—	5	3	3
Public transport	70	462	70	168	50	75	85	53	758
Motor cycle	—	—	—	—	—	—	—	—	—
Cycle	—	—	—	—	—	—	—	—	—
On foot	—	—	—	—	—	—	—	—	—
		660		240		150		62	1,112



	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	%	numbers	
Car driver	1.22	11	1.22	5	50	85	10	4	105
Passenger	4.66	42	4.66	17	—	—	5	2	61
Public transport	74.66	672	74.66	280	50	85	85	29	1,066
Motor cycle	4.66	42	4.66	17	—	—	—	—	59
Cycle	—	—	—	—	—	—	—	—	—
On foot	4.66	42	4.66	17	—	—	—	—	59
	89.86	809		336		170		35	1,350

**Table D.10**  
Mode of travel to the College of Commerce 1965 (evening students not included).

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	2.34	14	50	32	10	6	52
Passenger	2.34	14	—	—	5	3	17
Public transport	81.95	490	50	32	85	49	571
Motor cycle	—	—	—	—	—	—	—
Cycle	—	—	—	—	—	—	—
On foot	13.37	80	—	—	—	—	80
		598		64		58	720

**Table D.11**  
Mode of travel to the Elizabeth Gaskell College 1965.

Note: Response to the travel survey at this College was very poor. Results partly by interpolation with geographical distribution of residence.

Academic staff	bus	train
University	189	145
Institute	46	155
Totals	235	300
Full time students	bus	train
University	3,139	187
Institute	1,086	249
John Dalton	11	22
Northern School of Music	120	40
Manchester Royal College Music	126	105
College of Art	396	66
Commerce	483	189
Elizabeth Gaskell	476	14
Totals	5,837	872

**Table D.12**  
Public Transport: Relative travel by 'bus and train measured by survey 1964–65.

**D.2** Estimates of mode of travel to the Precinct in 1972 are based on the following assumptions:

- i. the rise in car use by students will be the same as the estimated rise for Manchester as a whole, i.e. by 45.5%.
- ii. the rise in car use by academic staff will be by a similar percentage, i.e. from 50% to 75%
- iii. the rise in car use by other staff will be by a similar percentage, i.e. from 10% to 14.5%

- iv. the use of motor cycles will rise only marginally to 5%
- v. numbers cycling and walking will remain the same
- vi. the percentages for students not attending will be as in 1965
- vii. students cars will carry on average 1 passenger; academic staff cars 1/5 passenger and other staff 1/2 passenger.

**Table D.13**  
Mode of travel to the University 1972

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	12.54	1,103	75.0	873	14.55	320	2,296
Passenger	12.54	1,103	15.0	175	7.27	160	1,438
Public transport	43.69	3,845	—	68	—	1,549	5,462
Motor cycle	5.0	440	—	4	—	—	444
Cycle	—	204	—	22			
On foot	—	1,181	—	22		171	1,600
		7,876		1,164		2,200	11,240



	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	16.41	558	50.0	229	14.55	211	998
Passenger	16.41	558	10.0	46	7.26	106	710
Public transport	53.61	1,823	34.85	163	—	1,037	3,023
Motor cycle	5.0	170	—	8	—	—	178
Cycle	—	291	—	8	—	99	403
On foot	—	—	—	5	—	—	—
		3,400		459		1,453	5,312

Table D.14  
Mode of travel to the Institute 1972.

	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers*	%	numbers	%	numbers	
Car driver	64.0	320	72.75	582	75	226	14.55	24	1,152
Passenger	16.0	80	18.18	145	—	—	7.27	12	237
Public transport	—	89	—	73	25	75	—	129	366
Motor cycle	—	—	—	—	—	—	—	—	—
On foot, cycle	—	11	—	—	—	—	—	—	11
		500		800		301		165	1,766

Table D.15  
Mode of travel to the John Dalton College 1972

\* Total of part-time students 4,000 attending on average one day per week.

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	14.55	73	75	75	14.55	3	151
Passenger	14.55	73	—	—	7.27	1	74
Public transport	65.9	329	25	25	79.17	16	370
Motor cycle	5.0	25	—	—	—	—	25
Cycle	—	—	—	—	—	—	—
On foot	—	—	—	—	—	—	—
		500		100		20	620

Table D.16  
Mode of travel to the Northern College of Music, 1972

	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers*	%	numbers	%	numbers	
Car driver	43.65	436	43.65	175	75	175	14.55	14	800
Passenger	21.82	218	21.82	87	—	—	7.27	7	312
Public transport	34.53	346	34.53	138	25	58	—	75	617
Motor cycle	—	—	—	—	—	—	—	—	—
Cycle	—	—	—	—	—	—	—	—	—
On foot	—	—	—	—	—	—	—	—	—
		1,000		400		233		96	1,729

Table D.17  
Mode of travel to the College of Art, 1972

\*Total of part time students assumed to be 2,000 attending on average one day per week

Table D.18  
Mode of travel to the College of Commerce, 1972

	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	%	numbers	
Car driver	2	30	2	12	75	217	14.55	9	268
Passenger	2	30	2	12	—	—	7.27	4	46
Public transport	86	1,290	86	516	25	72	—	46	1,924
Motor cycle	5	75	5	30	—	—	—	—	105
Cycle	—	—	—	—	—	—	—	—	—
On foot	5	75	5	30	—	—	—	—	105
		1,500		600		289		59	2,448



	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	3.4	29	75	68	14.55	12	109
Passenger	3.4	29	—	—	7.27	6	35
Public transport	83.8	712	25	23	—	64	799
Motor cycle	—	—	—	—	—	—	—
Cycle	—	—	—	—	—	—	—
On foot	9.41	80	—	—	—	—	80
		850		91		82	1,023

Table D.19  
Mode of travel to the Elizabeth Gaskell College, 1972

	Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	14.55	105	75	64	14.55	6	175
Passenger	7.27	53	—	—	7.27	3	56
Public transport	—	567	25	21	—	31	619
Motor cycle	—	—	—	—	—	—	—
Cycle	—	—	—	—	—	—	—
On foot	—	—	—	—	—	—	—
		725		85		40	850

Table D.20  
Mode of travel to the Adult Education College, 1972

D.3 Estimates of mode of travel to the Precinct in about 1984 are based on the following assumptions:

- i. the rise in car use by students will be by 150% over the 1965 level
- ii. there will be no further rise in car use by academic staff beyond the 1972 level
- iii. the rise in car use by other staff will be by 150% over 1965 level
- iv. the use of motor cycles will not increase beyond the 1972

percentage

- v. numbers cycling and walking will remain as they are in 1965
- vi. the percentages for students not attending will be as in 1965
- vii. 25% University students and 45% Institute students will be resident on the Precinct site
- viii. ratios of car passengers to driver will remain at 1972 levels.

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	16.0	2,287	72.0	1,647	25.0	858	4,792
Passenger	16.0	2,287	14.4	329	12.5	429	3,045
Public transport	—	3,074	—	110	—	1,795	4,979
Motor cycle	3.23	457	—	—	—	—	457
Cycle	—	204	—	22	—	—	—
On foot	—	1,181	—	100	—	350	1,857
		9,940		2,208		3,432	15,130
In residence							
On site	25.0	3,210	—	80	—	—	3,290
Non attendance	7.5	1,030	—	—	—	—	1,030

Table D.21  
Mode of travel to the University, 1984

Actual non-attendance assumed to remain at 10%. Residence on site reduces trip loss to 7.5%.

Table D.22  
Mode of travel to the Institute, 1984

Actual non-attendance assumed to remain at 2.5%. Residence on site reduces trip loss to 1.13%.

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	13.41	738	75.0	687	25	344	1,769
Passenger	13.41	738	15.0	137	12.5	172	1,047
Public transport	—	1,037	—	71	—	659	1,767
Motor cycle	2.69	148	—	8	—	—	156
Cycle	—	—	—	8	—	—	—
On foot	—	291	—	5	—	200	504
		2,952		916		1,375	5,243
In residence							
On site	45.2	2,486	—	—	—	—	2,486
Non attendance	1.13	62	—	—	—	—	62



	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	%	numbers	
Car driver	75.0	375	75.0	600	75.0	225	25.0	41	1,241
Passenger	19.0	95	19.0	152	—	—	12.5	20	267
Public transport	—	30	—	48	25.0	75	—	104	257
		500		800		300		165	1,765

**Table D.23**  
Mode of travel to the John Dalton College, 1984

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	25.0	150	75.0	90	25.0	6	246
Passenger	25.0	150	—	—	12.5	3	153
Public transport	—	270	25.0	30	—	15	315
Motor cycle	5.0	30	—	—	—	—	30
		600		120		24	744

**Table D.24**  
Mode of travel to the Northern College of Music, 1984

	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	%	numbers	
Car driver	75.0	900	75.0	150	75.0	175	25.0	24	1,249
Passenger	19.0	228	19.0	38	—	—	12.5	12	278
Public transport	6.0	72	6.0	12	25.0	58	—	60	202
		1,200		200		233		96	1,729

**Table D.25**  
Mode of travel to the College of Art, 1984

	Full time students		Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	%	numbers	
Car driver	3.0	45	3.0	18	75.0	225	25.0	15	303
Passenger	3.0	45	3.0	18	—	—	12.5	7	70
Public transport	84.0	1,260	84.0	504	25.0	75	—	38	1,877
Motor cycle	5.0	75	5.0	30	—	—	—	—	105
Cycle and on foot	5.0	75	5.0	30	—	—	—	—	105
		1,500		600		300		60	2,460

**Table D.26**  
Mode of travel to the College of Commerce, 1984

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	5.85	35	75.0	68	25.0	20	123
Passenger	5.85	35	—	—	12.5	10	45
Public transport	—	700	25.0	23	—	52	775
Cycle and on foot	—	80	—	—	—	—	80
		850		91		82	1,023

**Table D.27**  
Mode of travel to the Elizabeth Gaskell College, 1984

	Part time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	25.0	181	75.0	64	25.0	10	255
Passenger	12.5	90	—	—	12.5	5	95
Public transport	62.5	454	25.0	21	—	25	500
		725		85		40	850

**Table D.28**  
Mode of travel to the Adult Education College, 1984

**Table D.29**  
Mode of travel to the Teacher Training College, 1984

	Full time students		Academic staff		Other staff		Total trips
	%	numbers	%	numbers	%	numbers	
Car driver	25.0	250	75.0	83	25.0	12	345
Passenger	12.5	125	—	—	12.5	6	131
Public transport	62.5	625	25.0	28	—	32	685
		1,000		111		50	1,161



**D.4** From the foregoing estimates the trip pattern in 1965, 1972 and 1984 will be:

	Full time students	Part time students	Academic staff	Other staff	Totals
Car driver	1,154	326	894	295	2,669
Passenger	720	76	9	146	951
Public transport	6,709	681	842	2,234	10,466
Motor cycle	516	23	12	—	551
Cycle and on foot	1,830	17	57	270	2,174
	10,929	1,123	1,814	2,945	16,811

**Table D.30**  
1965 trips (Bar chart (Figure 4.3) Reference A.)

	Full time students	Part time students	Academic staff	Other staff	Totals
Car driver	2,549	874	1,927	599	5,949
Passenger	2,091	297	221	299	2,908
Public transport	8,434	1,294	505	2,947	13,180
Motor cycle	710	30	12	—	752
Cycle and on foot	1,842	30	57	270	2,199
	15,626	2,525	2,722	4,115	24,988

**Table D.31**  
1972 trips (Bar chart (Figure 4.3) Reference B.)

**Table D.32**  
1984 trips (Bar chart (Figure 4.3) Reference G.)

	Full time students	Part time students	Academic staff	Other staff	Totals
Car driver	4,780	949	3,264	1,330	10,323
Passenger	3,703	298	466	664	5,131
Public transport	7,068	1,018	491	2,780	11,357
Motor cycle	710	30	8	—	748
Cycle and on foot	1,831	30	135	550	2,546
	18,092	2,325	4,364	5,324	30,105



## Appendix E Origin and destination traffic survey

## Survey

**E.1** The Interim Report outlined the need for further studies and early in 1965 the Consultants proposed an Origin/Destination survey of vehicular traffic passing through the Precinct road network. Consultations were held with the City Engineer and the City Police and the survey was organised with their advice.

**E.2** Various methods of survey were considered but the heavy traffic flows on the main routes made direct interviewing of motorists impracticable. In view of the satisfactory response to the SELNEC survey, similar techniques were adopted in the Precinct survey which, therefore, comprised the distribution of pre-paid postcard questionnaires to a variable sample of vehicles. These requested information on the type of vehicle, the purpose of the journey and details of the trip origin, destination and any intermediate stop. A specimen of this questionnaire is shown in Figure E.1.

[illegible]

Figure E.1

**E.3** In selecting a cordon around the Precinct and the survey stations, the main aims were to ensure as far as possible, the minimum of inconvenience to drivers and the maximum size of sample to be interviewed. The area contained within the cordon was sufficiently small to enable through traffic to be adequately surveyed by uni-directional interviewing and since the collation of the O.D. and Student Surveys would provide an adequate base of terminal movements, it was decided to interview drivers in only one direction. Since traffic crossing the Precinct was generally required to stop at the junctions with the peripheral routes, interviewing drivers at these points would reduce inconvenience: hence only outbound traffic was surveyed.

**E.4** The City Engineer recommended Thursday as being representative of an average weekday and consequently the main O.D. survey was mounted on Thursday, 18th February, 1965 and a subsidiary survey on Thursday, 20th May, 1965. In each case the survey covered the 12 hour period, 7.00 a.m. to 7.00 p.m.

**E.5** Simultaneous counts were made of the total volume of traffic passing the cordon points during the 12 hour period of the survey, each class of vehicle being counted separately with sub-totals for each half-hour period. Further classified counts of traffic volumes were carried out, on all those minor exits from the Precinct not covered by the Origin and Destination Survey Stations, on Thursday, 20th May, 1965. In the subsequent analysis it has been assumed that the characteristics of these journeys will be the same as those actually studied. As the flows on the minor routes are relatively small, any slight errors arising from this assumption are unlikely to affect the validity of the conclusions.

**E.6** The number of usable results from the survey was lower than anticipated, but since we were only interested in the broad picture of movements and the way they are likely to be affected in the future by fairly radical changes in the road pattern, the processed data provided the requisite base for the subsequent planning of the Precinct. Some 48,000 vehicle trips were recorded during the survey and of the postcards returned, some 3,900 were complete and used in the analysis. Thus the overall sample size was approximately 1 in 12.

## Analysis

**E.7** The study area was zoned on “ring and sector” principles, there being 8 zones in the inner ring (within the Precinct), 14 zones in the intermediate ring (immediately adjacent to the Precinct), and 12 zones in the outer ring (aligned to main routes). The zoning of the area is shown in Figure E.2.

**E.8** The travel information collected in the O.D. survey was in respect of outward movements only from the zones within the Precinct; similarly the collected information concerning movements to or from any of the other zones consisted only of that element which passed through the Precinct for some reason – either because of an intermediate stop within the cordon, or simply because under the existing circumstances the driver found that this was the most attractive route (in many cases, no doubt, because of congestion on the more direct routes). The traffic affecting the Precinct can thus be divided into three different types: that generated within the Precinct (terminal traffic); that attracted to the Precinct en route to some further destination (through-stopping); and that simply passing through (through non-stopping).

**E.9** The survey data was transcribed into numerical code by temporary staff, then transferred to punched cards and processed by the City Treasurer's Department to provide interzonal tabulations, by vehicle type and trip purpose for the three groups of trips:

Group 1	Terminal trips	Origin within the Precinct Destination outside the Precinct
Group 2	Through Stopping trips	Origin outside the Precinct Stop within or immediately adjacent to the Precinct Destination outside the Precinct
Group 3	Through Non-Stopping trips	Origin outside the Precinct Destination outside the Precinct

The interzonal flows in these tabulations were derived by the application of expansion factors to the response sample. Separate expansion factors were used for each vehicle class in each time period. Analysis of the interzonal flows was primarily on a day basis and the results of the unidirectional survey were adjusted (by assumed reciprocal flows in Group 1) to provide a comprehensive two-way flow pattern. However, in the analyses University and Non-University trips were separately tabulated to provide a means of collating the O.D. and Student Surveys and to facilitate projections.

**E.10** The results of the volumetric analyses of 1965 flows are shown in Figures E.3, E.4 and E.5 which represent 12-hour flows, a.m. peak hour flows and p.m. peak hour flows respectively.

**E.11** The 1965 interzonal flows are shown in tables E.1, E.2 and E.3 which represent "Terminal" trips, "Through Stopping" trips and "Through Non-Stopping" trips respectively.



Figure E.2 Traffic zones

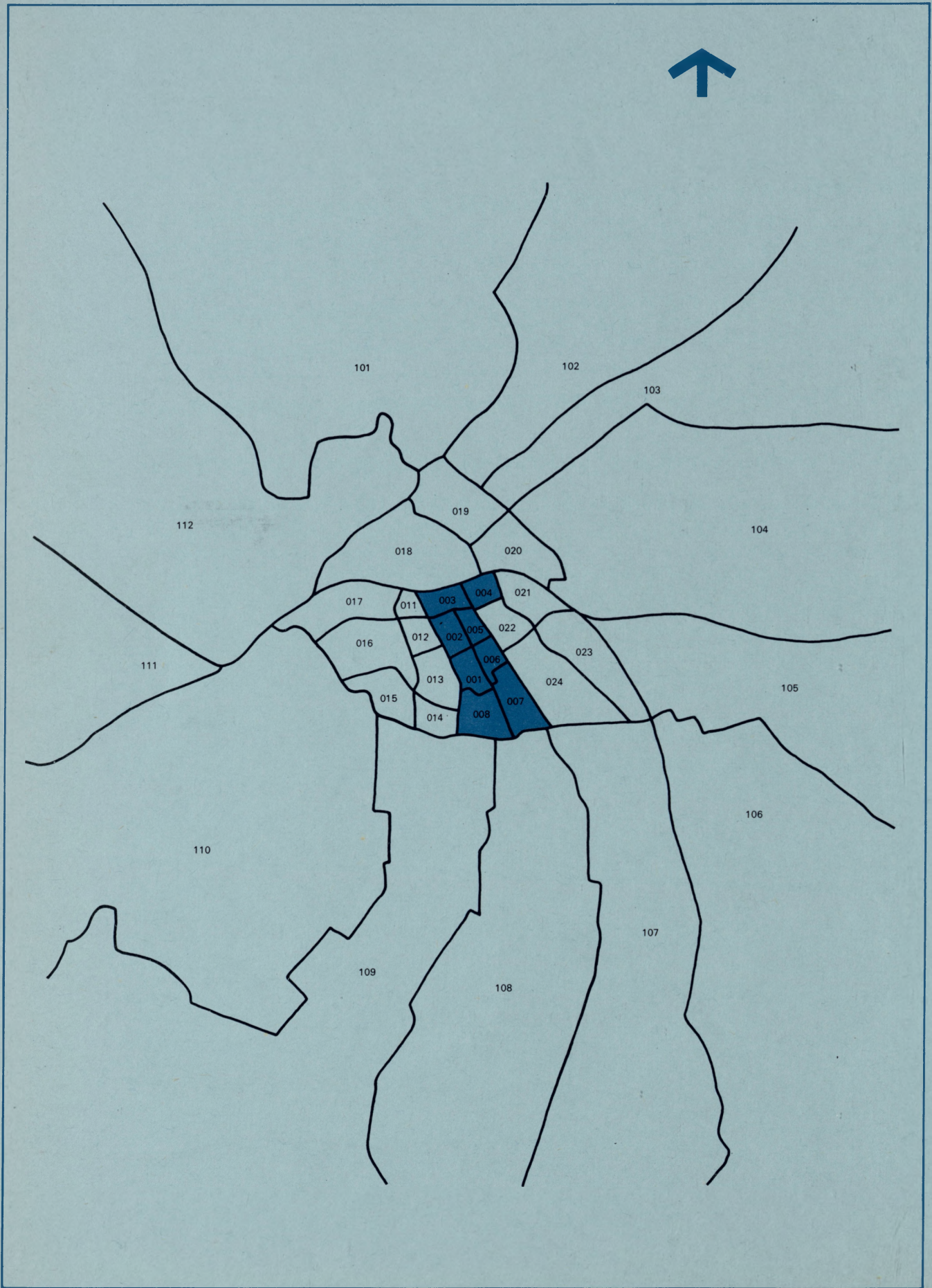




Figure E.3 1965 twelve hour traffic flows

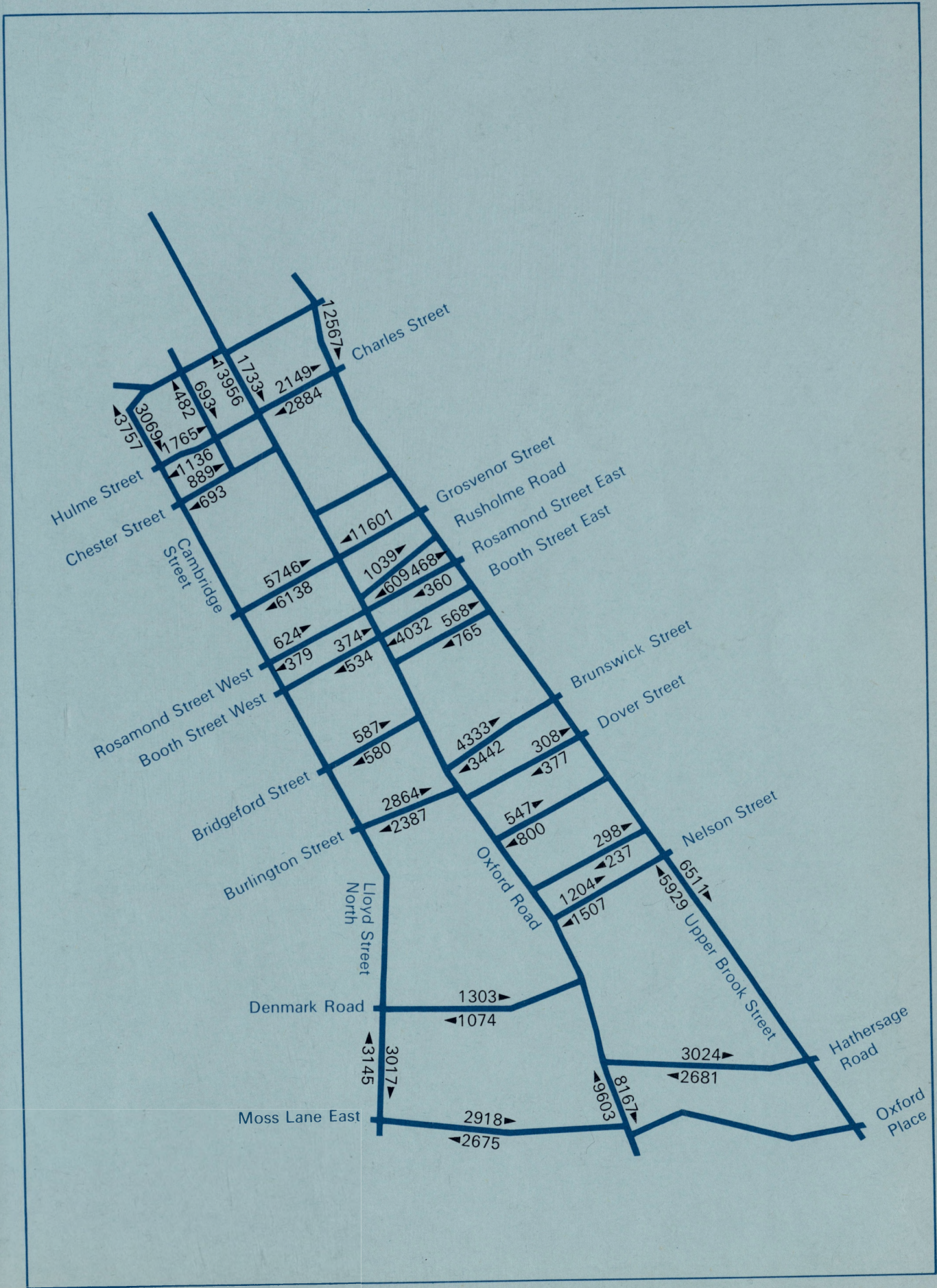




Figure E.4 1965 morning peak hour traffic flows

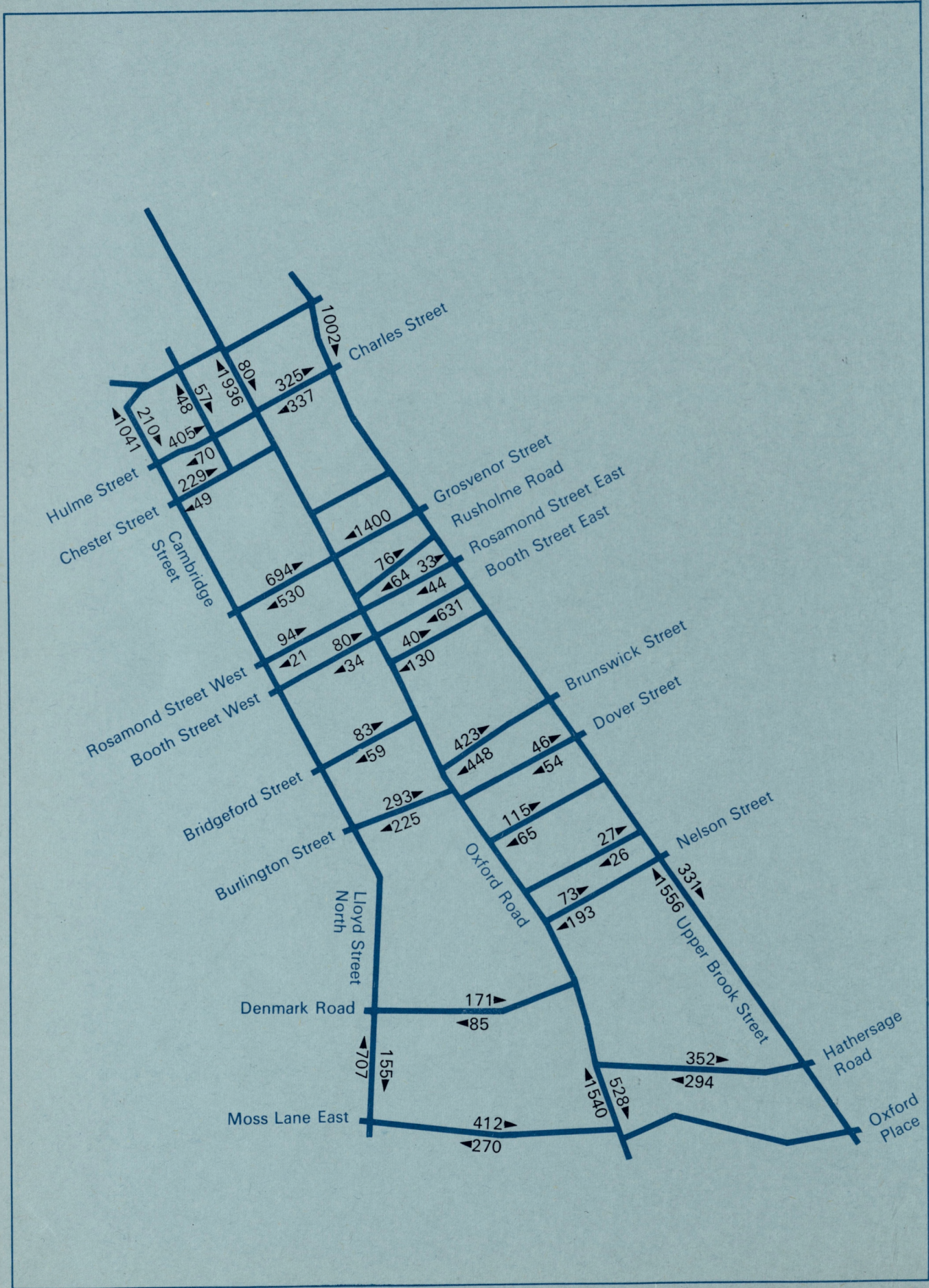
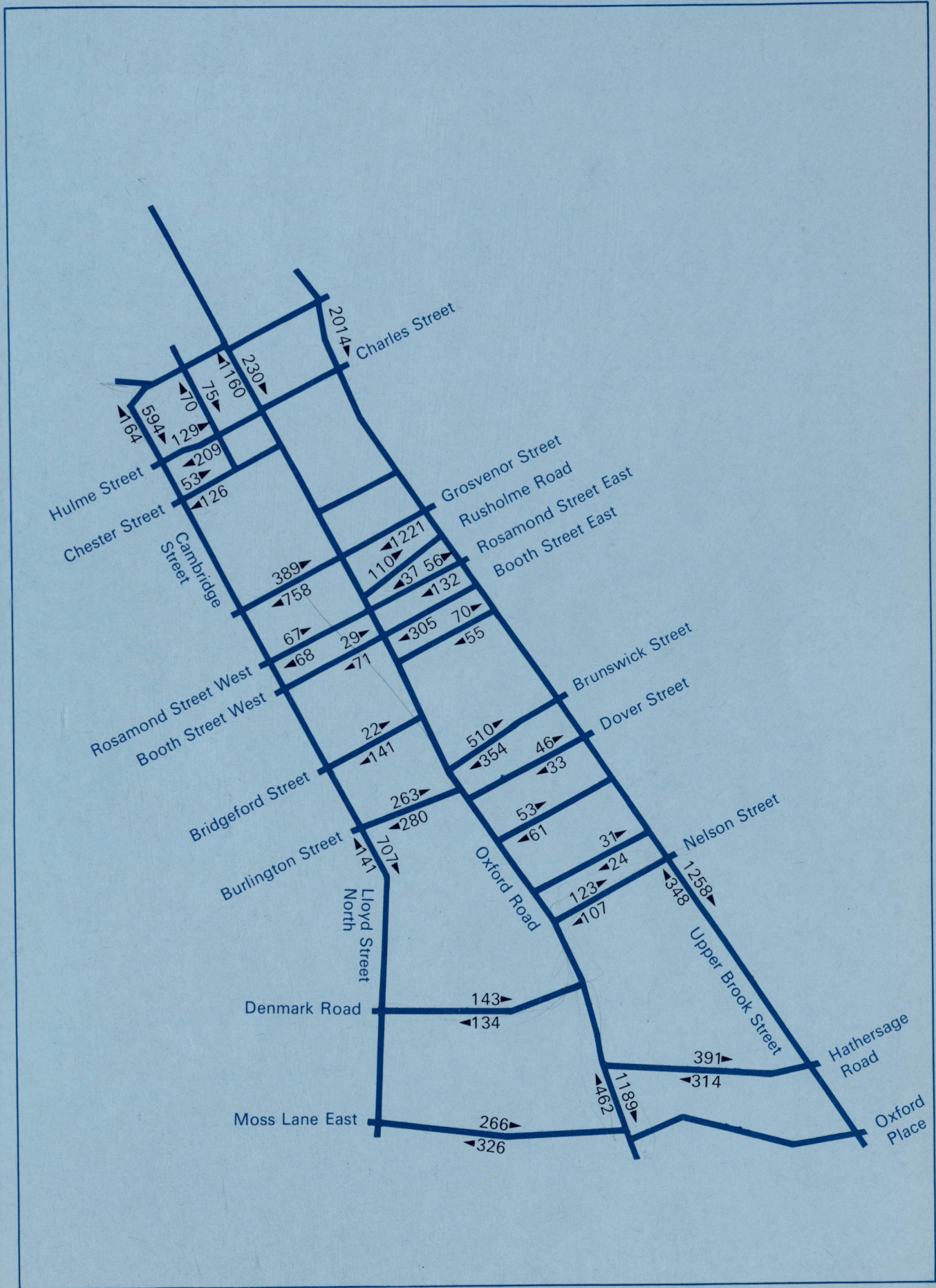




Figure E.5 1965 evening peak hour traffic flows





		destination zones																	
origin	001	011	018	021	sub	101	102	103	104	105	106	107	108	109	110	111	112	sub	
zones	-008	-017	-020	-024	total													total	total
001-008	—	221	884	227	1,332	416	325	384	408	222	781	488	524	515	655	34	984	5,736	7,068

**Table E.1**  
Interzonal tabulation: 1965 volumes: terminal trips  
Note: The total interzonal terminal trips are obtained by taking the reciprocals of the figures given above

						destination zones															
origin	001	011	018	021	sub	101	102	103	104	105	106	107	108	109	110	111	112	sub	total		
zones	-008	-017	-020	-024	total													total			
001-008	—	—	—	—	—	173	63	64	97	177	276	97	260	160	271	80	306	2,024	2,024		
011-017	—	—	—	—	—	62	25	—	—	32	29	83	24	—	47	—	13	315	315		
018-020	—	—	—	—	—	186	95	144	169	76	101	144	286	196	219	34	241	1,891	1,891		
021-024	—	—	—	—	—	16	4	—	22	15	65	—	51	102	100	24	41	440	440		
sub																					
totals	—	—	—	—	—	264	124	144	191	123	195	227	361	298	366	58	295	2,646	2,646		
101	124	64	122	37	223	—	—	—	—	—	—	—	—	—	—	—	—	—	347		
102	63	—	120	27	147	—	—	—	—	—	—	—	—	—	—	—	—	—	210		
103	75	—	102	73	175	—	—	—	—	—	—	—	—	—	—	—	—	—	250		
104	121	44	56	22	122	—	—	—	—	—	—	—	—	—	—	—	—	—	243		
105	274	27	94	16	137	—	—	—	—	—	—	—	—	—	—	—	—	—	411		
106	233	56	178	91	325	—	—	—	—	—	—	—	—	—	—	—	—	—	558		
107	156	—	324	11	335	—	—	—	—	—	—	—	—	—	—	—	—	—	491		
108	269	21	306	36	363	—	—	—	—	—	—	—	—	—	—	—	—	—	632		
109	161	39	192	69	300	—	—	—	—	—	—	—	—	—	—	—	—	—	461		
110	260	—	242	7	249	—	—	—	—	—	—	—	—	—	—	—	—	—	509		
111	38	12	—	—	12	—	—	—	—	—	—	—	—	—	—	—	—	—	50		
112	250	62	145	51	258	—	—	—	—	—	—	—	—	—	—	—	—	—	508		
sub																					
totals	2,024	325	1,881	440	2,646	—	—	—	—	—	—	—	—	—	—	—	—	—	4,670		
totals	2,024	325	1,881	440	2,646	437	187	208	288	300	471	324	621	458	637	138	601	4,670	9,340		

**Table E.2**  
Interzonal tabulation: 1965 volumes: through stopping trips

**Table E.3**  
Interzonal tabulation: 1965 volumes: through non-stopping trips

origin		destination zones																sub	total
		011	018	021	sub	101	102	103	104	105	106	107	108	109	110	111	112		
zones		-017	-020	-024	total														
001-008		—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
011-017		10	184	37	231	19	45	76	53	103	201	91	35	—	33	—	—	656	887
018-020		85	—	58	143	15	—	7	101	80	559	555	929	914	1,127	24	11	4,322	4,465
021-024		84	168	—	252	—	68	—	—	—	6	102	167	659	601	69	179	1,851	2,103
sub																			
totals		179	352	95	626	34	113	83	154	183	766	748	1,131	1,573	1,761	93	190	6,829	7,455
101		8	55	12	75	—	—	—	—	—	63	19	126	188	32	—	—	428	503
102		114	96	—	210	—	—	—	—	—	65	41	192	373	293	—	—	964	1,174
103		83	105	13	201	—	—	—	—	—	38	56	90	446	652	76	—	1,358	1,559
104		140	42	—	182	—	—	—	—	23	—	76	60	367	666	234	79	1,505	1,687
105		207	380	18	605	14	—	—	—	—	—	—	32	124	355	424	463	1,412	2,017
106		283	2,339	43	2,665	146	37	13	36	14	—	14	36	20	113	14	708	1,151	3,816
107		151	2,158	36	2,345	33	54	71	52	—	6	—	6	—	42	3	364	631	2,976
108		82	1,211	126	1,419	227	95	127	42	50	—	—	—	—	14	181	159	895	2,314
109		10	1,277	445	1,732	287	272	364	285	148	—	—	5	—	—	—	187	1,548	3,280
110		21	1,021	484	1,526	70	76	316	192	205	73	111	36	6	—	—	30	1,115	2,641
111		—	94	100	194	28	—	93	325	226	38	—	—	—	—	—	—	710	904
112		47	83	154	284	—	—	10	126	128	321	156	226	113	30	—	—	1,110	1,394
sub																			
totals		1,146	8,861	1,431	11,438	805	534	994	1,058	794	604	473	809	1,637	2,197	932	1,990	12,827	24,265
totals		1,325	9,213	1,526	12,064	839	647	1,077	1,212	977	1,370	1,221	1,940	3,210	3,958	1,025	2,180	19,656	31,720



E.12 The numbers of vehicle trips of each type and the proportion of the total are indicated in the following table:

Type of traffic	vehicles/day	% of total
Terminal	14,100	25
Through stopping	9,300	17
Through non-stopping	31,700	58
Total	55,100	100

Of the through non-stopping flows, the predominant ones were on a north-south axis (65% of the total amount of through non-stopping traffic) and the vast majority of this was on Oxford Road. Flows on the east-west axis (35% of the total) were divided between a larger number of routes, the main ones being Cavendish Street/Grosvenor Street (carrying 31% of the total number of east-west through journeys) and Burlington Street/Brunswick Street (17%).

E.13 Of all the vehicle trips having origin or destination within the Precinct (terminal and through-stopping), by far the greatest proportion are to or from zones lying to the north or south (41% to or from the south and 37% to or from the north). These figures are a reflection of the general radial tendency of the daily movements as a whole and indicate the much greater need at present for additional road space on radial alignments than on cross-route or "ring-route" alignments.

E.14 On most of the routes through the Precinct, the hourly variations in traffic flow followed much the same general pattern with distinct peaks during the work-journey periods, morning and afternoon, that is between 8.30 a.m. and 9.30 a.m. and 5.00 p.m. and 6.00 p.m. There were, however, some exceptions to this, notably along Rusholme Road where the peak flows occurred between 11.30 a.m. and 12.30 p.m.; Nelson Street where the peak inward flow occurred between 9.00 a.m. and 10.00 a.m. and the peak outward between 3.30 p.m. and 4.30 p.m.; and Great Marlborough Street where the inward peak was between 2.00 p.m. and 3.00 p.m., and the outward between 4.30 p.m. and 5.30 p.m. The inference from this is that these routes are used predominantly by vehicles associated with business and commercial premises and hence the nuisance caused by their passage is not confined to the rush-hour but continues throughout the working day.

E.15 The educational establishments are already the principal generators of person trips within the cordon area and a very large part of this consists of the twice daily movement of staff and students. But at present only about a quarter of the terminating vehicle trips are associated with the University, the remainder being generated by the many other activities within the cordon area including the hospital. At the moment 16% of all the students travel by car daily to the Precinct. Arrival times in the morning are far more concentrated than departure times. 67% of the University arrivals and 96% of College arrivals occur in the peak arrival hour 8.30 a.m. to 9.30 a.m., which coincides, of course, with the City Centre peak hour. The number of students of the University and the Institute actually travelling during each half hour period of a typical day are shown in Figures E.6 and E.7 respectively. These diagrams indicate clearly the marked concentration of inward morning movements compared with the outward movements which are spread out over a much greater length of time.

Projections

E.16 The application of a simple overall growth factor to present day trips was considered inappropriate because of the radical land use changes that will take place within the

Precinct and in the immediately adjacent areas. Consequently zonal growth factors were derived for inner and intermediate zones, by taking account of changes in

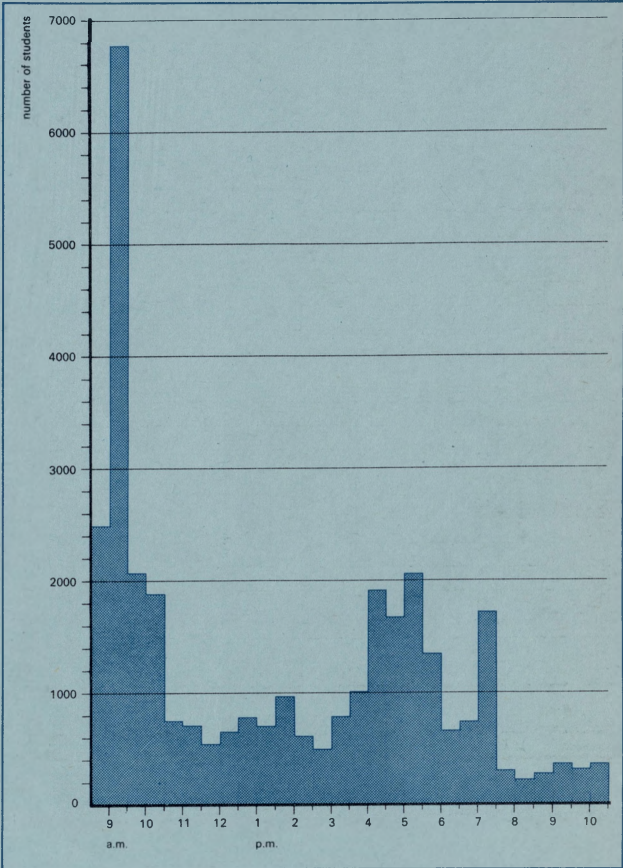
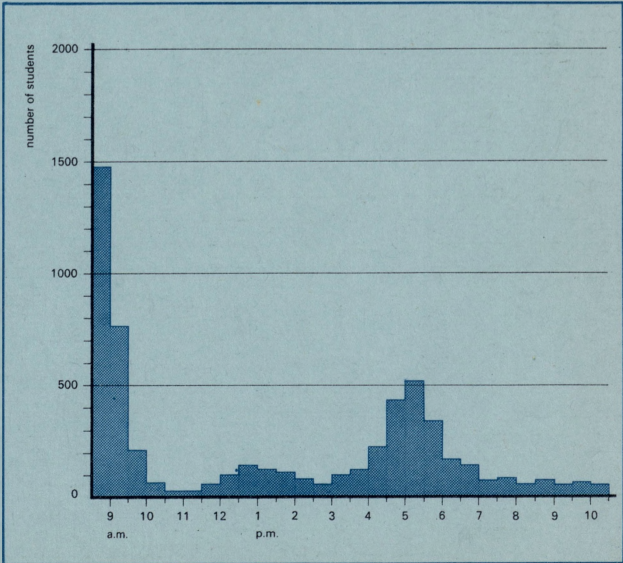


Figure E.6 Numbers of University students travelling during the average day of survey week, 1965

Figure E.7 Numbers of Institute students travelling during the average day of survey week, 1965





residential population employment, car ownership and changes in social status such as will occur after slum clearances, viz:

Zonal Growth Factor, C(12)

$$= \frac{P.f}{P.p} \times \frac{C.f}{C.p} \times \frac{T.h}{T.t} + \frac{J.f}{J.p} \times \frac{V.f}{V.p} \times \frac{T.n}{T.t}$$

- where P.f = future population  
P.p = present population  
C.f = future car ownership  
C.p = present car ownership  
T.h = home-based trips  
T.t = total trips  
J.f = future employment opportunities  
J.p = present employment opportunities  
V.f = future vehicle ownership  
V.p = present vehicle ownership  
T.n = non-home based trips

As indicated in paragraph E.8 University and Non-University trips were separately analysed and in predicting future interzonal flows, University growth factors were derived for the inner zones.

E.17 In the case of the outer zones, an overall growth factor was derived on the basis of growth trends in population and car ownership, viz:

Town Growth factor, G(T)=  $\frac{P.f}{P.p} \times \frac{C.f}{C.p}$

The population of Manchester has been expanding at the rate of 1.14% per annum, hence by 1972 the increase will be 8.24%.

Table E.4  
Zonal growth factors for the inner zones and the intermediate zones

Zones	001	002	003	004	005	006	007	008
Gz	1.27	1.46	1.34	0.65	1.61	0	2.06	1.81
Gz'	2.32	13.9	2.61	3.32	0	2.32	1.81	0
Zones	011	012	013	014	015	016	017	018
Gz	0.61	17.23	4.66	1.51	2.64	0.88	0.34	1.36
Zones	019	020	021	022	023	024		
Gz	1.36	1.36	1.26	4.46	1.16	1.19		

N.B. Gz represents growth factor for non-university trips  
Gz' represents growth factor for university trips  
The 1964 car ownership level in Manchester C.B.C. was 0.115 cars per head of population, and projection of this to 1972 gives a level of 0.1625 cars per head. Thus the Town Growth Factor, G = 1.529 or the growth between 1965 and 1972 will be 52.9%. This is approximately 6% per annum, which compares favourably with the 5% growth per annum determined by W. S. Atkins in their preliminary investigations in connection with the Conurbation Transportation study. In order not to over-estimate predicted traffic flows, 5% growth per annum was adopted and compounded over the seven years to 1972, thus providing a growth factor of 1.4.

E.18 The 1972 interzonal flows were initially predicted by means of the average growth factor method and subsequently checked by means of the Detroit method. The variance between these methods was of the order of 4%.

E.19 Tables E.5, E.6 and E.7 represent the predicted 1972 interzonal flows for Terminal trips, Through Stopping trips and Through Non-Stopping trips respectively.

E.20 Figures E.8, E.9 and E.10 show desire line movements of the predicted 1972 interzonal flows from Terminal trips, Through Stopping trips and Through Non-stopping trips respectively.

Network

E.21 In the light of the present day traffic flows, and on the basis of the planning proposals for the Precinct, a

provisional network was adopted for testing. The network is shown in Figure E.11 and comprises peripheral routes, two cross-Precinct routes and a central service spine route.

Assignment

- E.22 The network to which the 1972 traffic flows were assigned incorporated the following design assumptions:
- i. Mancunian Way complete and operational, but movements at the junction with Upper Brook Street restricted as per current design
  - ii. Upper Brook Street improvement between Grafton Street and Mancunian Way
  - iii. Princess Street and Sackville Street still function as paired one-way streets
  - iv. Cambridge Street and Lloyd Street remain unimproved.
  - v. Princess Parkway extension to Mancunian Way is complete but severely restricted in capacity.

E.23 The 1972 interzonal movements have been assigned to our proposed network taking into account the following considerations:

- i. drivers normally take the shortest route (in time)
- ii. the majority of "University" trips would be terminating in the major car parks and would thus be routed via Cambridge Street or Upper Brook Street
- iii. essential "service" traffic approaching or leaving the Precinct would use either Oxford Road or the peripheral routes depending upon the "local" routes in the area being serviced
- iv. Booth Street would act as a local distributor serving the Precinct and the two adjacent housing areas of Brunswick and Hulme. In the form shown, it would allow vehicles destined for car parks on the opposite side of the Precinct from the side of approach to use this route for crossing the Precinct. However, the first analysis of possible future traffic flows showed that this would tend to create an overloading problem. As a consequence, it has been assumed that careful control will be exercised over the location and build up of parking facilities within the Precinct and particularly over the allocation of car spaces to users in order to minimise these cross movements.
- v. the Grafton Street, Denmark Road link would serve functions similar to Booth Street and replace the present cross route via Brunswick Street and Burlington Street.
- vi. Mancunian Way mainly caters for the longer cross-Precinct movements.

E.24 The results of the assignment are shown in Figures E.12 and E.13 which represent 12 hour flows and a.m. peak hour flows (1972) respectively.

E.25 Figure E.14 shows the predicted 1972 12 hour traffic volumes and turning movements at these junctions.

Vehicle Ownership after 1972

E.26 The Ministry of Transport memorandum on Highway Statistics indicated that in 1964 the car ownership within Manchester C.B.C. was 0.12 and the overall vehicle ownership was 0.18 vehicles per head of population. On the basis of Tanner's theory\* the probable growth of vehicle ownership in Manchester is:

1972	: 0.23	vehicles per head of population
1980	: 0.30	" " " " "
1990	: 0.34	" " " " "
2000	: 0.35	" " " " "
2010	: 0.35	" " " " "

The 2010 level of ownership for Manchester of 0.35 may be compared with the projected national average of 0.40 vehicles per person. It is unlikely, therefore, to be an over-estimate of Manchester's traffic growth.

\* "Forecasts of Vehicle Ownership in Great Britain" by J. C. Tanner, MA, FSS, Road Research Laboratory, Ministry of Transport. June, 1965.



origin zones	destination zones																	sub total	total
	001	011	018	021	sub total	101	102	103	104	105	106	107	108	109	110	111	112		
001-008	—	697	1,203	294	2,194	642	490	538	627	332	1,112	700	797	771	958	46	1,437	8,450	10,644

**Table E.5**  
Interzonal tabulation: 1972 volumes: terminal trips  
Note: The total interzonal terminal trips are obtained by taking the reciprocals of the figures given above

origin zones	destination zones																	sub total	total
	001	011	018	021	sub total	101	102	103	104	105	106	107	108	109	110	111	112		
001-008	—	—	—	—	—	241	89	91	135	247	386	136	364	224	378	112	427	2,830	2,830
011-017	—	—	—	—	—	87	35	—	—	45	40	115	33	—	66	—	18	439	439
018-020	—	—	—	—	—	261	134	203	237	106	141	202	401	274	307	47	335	2,648	2,648
021-024	—	—	—	—	—	22	6	—	31	21	91	—	71	142	140	33	58	615	615
sub totals	—	—	—	—	—	370	175	203	268	172	272	317	505	416	513	80	411	3,702	3,702
101	173	89	172	49	310	—	—	—	—	—	—	—	—	—	—	—	—	—	483
102	93	—	172	38	210	—	—	—	—	—	—	—	—	—	—	—	—	—	303
103	105	—	167	102	269	—	—	—	—	—	—	—	—	—	—	—	—	—	374
104	169	61	79	31	171	—	—	—	—	—	—	—	—	—	—	—	—	—	340
105	385	38	132	22	192	—	—	—	—	—	—	—	—	—	—	—	—	—	577
106	328	64	260	134	459	—	—	—	—	—	—	—	—	—	—	—	—	—	786
107	217	—	454	15	468	—	—	—	—	—	—	—	—	—	—	—	—	—	686
108	373	29	428	50	507	—	—	—	—	—	—	—	—	—	—	—	—	—	880
109	229	55	249	97	401	—	—	—	—	—	—	—	—	—	—	—	—	—	630
110	357	—	339	10	349	—	—	—	—	—	—	—	—	—	—	—	—	—	706
111	41	16	—	—	16	—	—	—	—	—	—	—	—	—	—	—	—	—	57
112	360	87	196	67	350	—	—	—	—	—	—	—	—	—	—	—	—	—	710
sub totals	2,830	439	2,648	615	3,702	—	—	—	—	—	—	—	—	—	—	—	—	—	6,532
totals	2,830	439	2,648	615	3,702	611	264	294	403	419	658	453	869	640	891	192	838	6,532	13,064

**Table E.6**  
Interzonal tabulation: 1972 volumes: through stopping trips

**Table E.7**  
Interzonal tabulations: 1972 volumes: through non-stopping trips

	destination zones																	
origin	011	018	020	sub	101	102	103	104	105	106	107	108	109	110	111	112	sub	
zones	—017	—020	—024	total													total	total
001–008	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
011–017	26	305	66	397	58	65	92	103	223	710	276	38	—	191	—	—	1,756	2,153
018–020	252	—	73	325	21	—	10	140	110	722	767	1,281	1,260	1,548	33	15	5,957	6,282
021–024	253	268	—	521	—	88	—	—	—	8	190	230	991	946	90	231	2,774	3,295
sub																		
totals	531	573	139	1,243	79	153	102	243	333	1,490	1,233	1,549	2,251	2,685	123	246	10,487	11,730
101	9	76	28	113	—	—	—	—	—	88	27	177	263	45	—	—	600	713
102	144	133	—	277	—	—	—	—	—	91	57	268	522	412	—	—	1,350	1,627
103	176	145	17	338	—	—	—	—	—	53	78	126	625	912	106	—	1,900	2,238
104	237	58	—	295	—	—	—	—	32	—	106	84	515	930	327	113	2,107	2,402
105	420	524	24	968	20	—	—	—	—	—	—	45	175	495	593	648	1,976	2,944
106	472	3,237	72	3,781	206	52	18	50	20	—	20	50	28	154	20	990	1,608	5,389
107	269	3,009	85	3,363	46	77	100	74	—	8	—	6	—	58	4	510	883	4,246
108	193	1,668	214	2,075	318	133	178	59	70	—	—	—	—	20	254	223	1,255	3,330
109	9	1,760	675	2,444	400	381	510	400	207	—	—	7	—	—	—	262	2,167	4,611
110	20	1,412	672	2,104	98	106	444	270	288	102	153	50	8	—	—	42	1,561	3,665
111	—	130	144	274	39	—	130	455	316	53	—	—	—	—	—	—	993	1,267
112	120	85	200	405	—	—	14	176	179	450	218	316	158	42	—	—	1,553	1,958
sub																		
totals	2,069	12,237	2,131	16,437	1,127	749	1,394	1,484	1,112	845	659	1,129	2,294	3,068	1,304	2,788	17,953	34,390
totals	2,600	12,810	2,270	17,680	1,206	902	1,496	1,727	1,445	2,335	1,892	2,678	4,545	5,753	1,427	3,034	28,440	46,120



Figure E.8
Desire line movements in 1972 – terminal

Figure E.9
Desire line movements in 1972 – through stopping

250  
500  
1000  
2000  
3000

Scale: two way volume  
vehicles per 12 hours

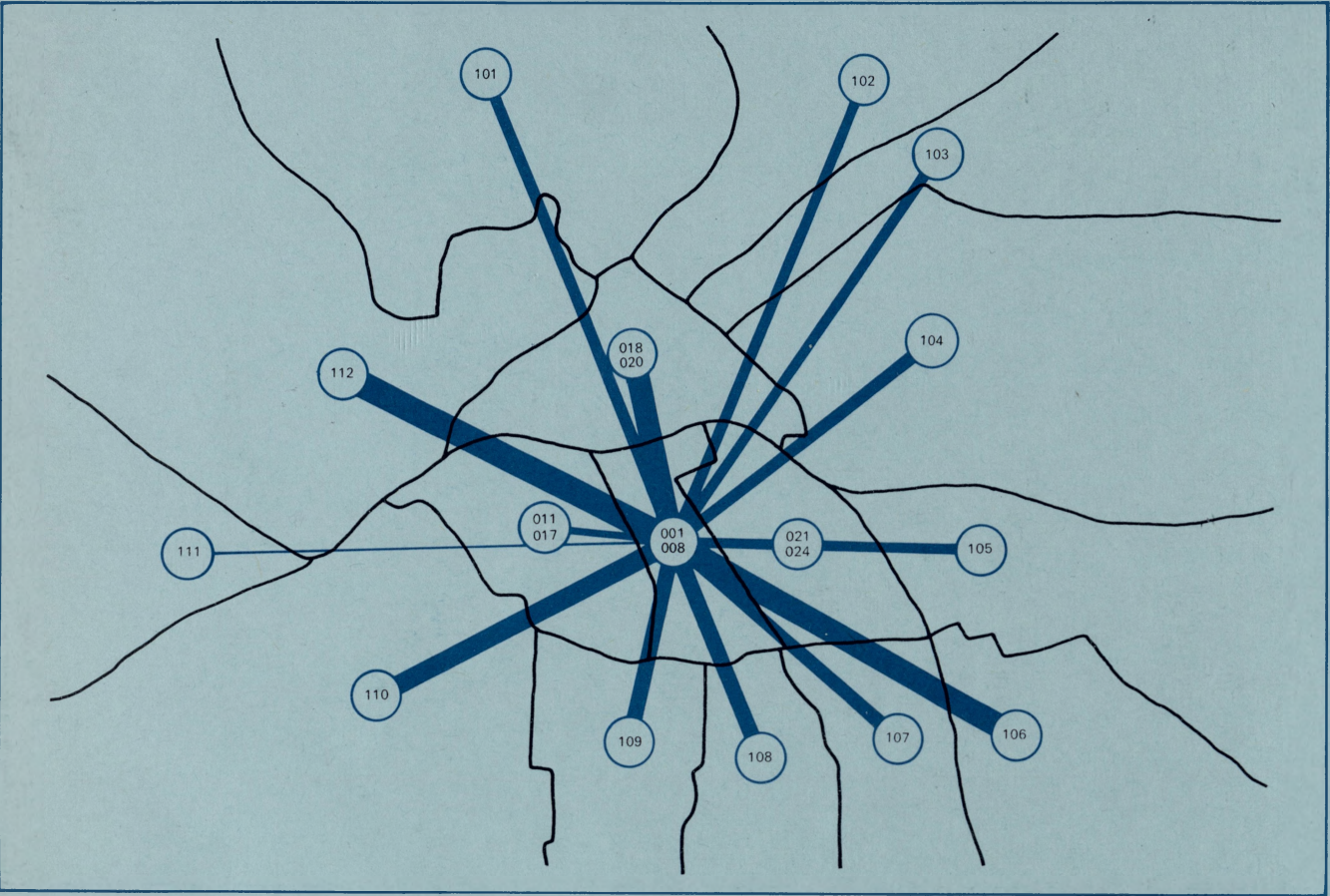


Figure E.8

Figure E.9

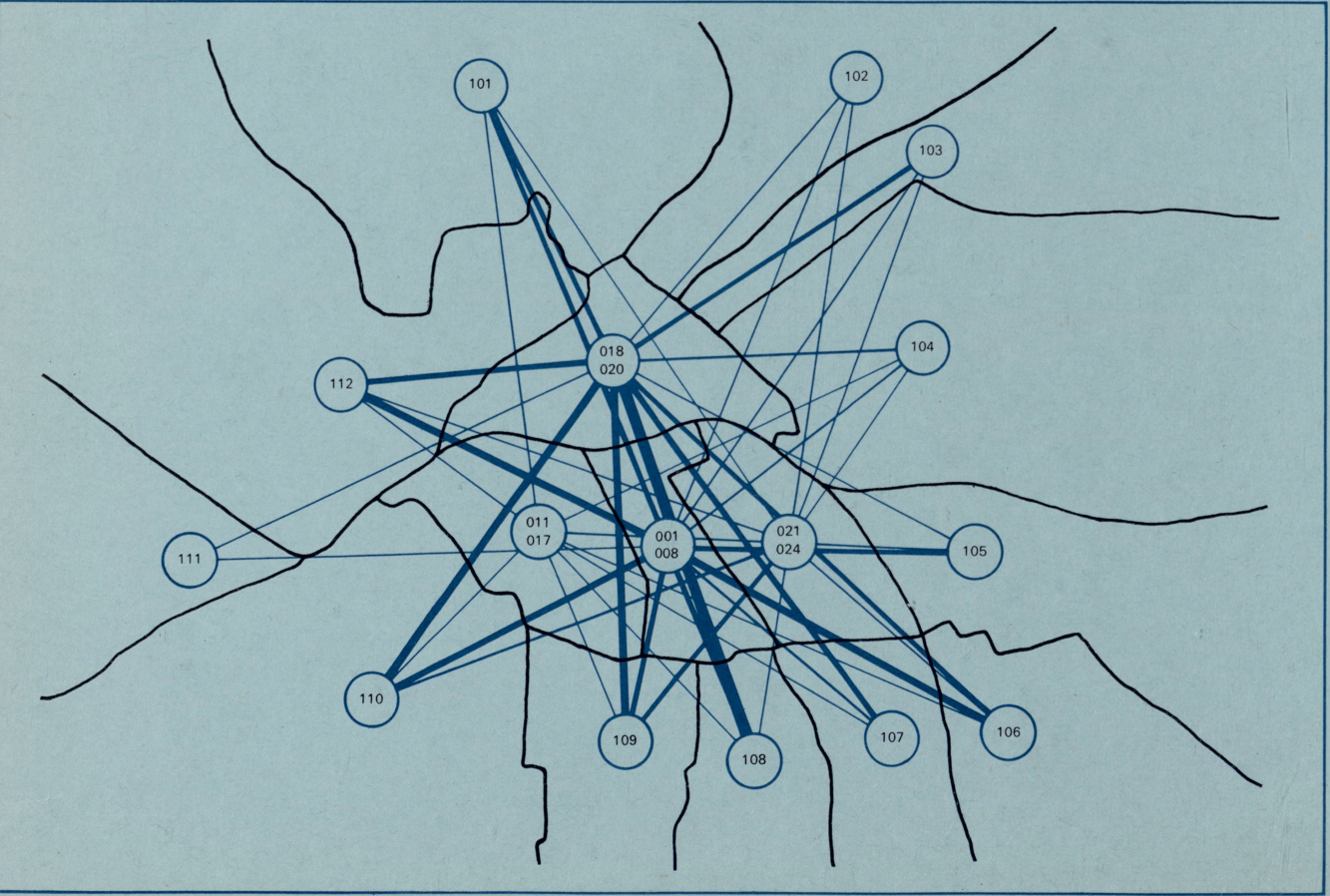




Figure E.10 Desire line movements in 1972 – through non-stopping

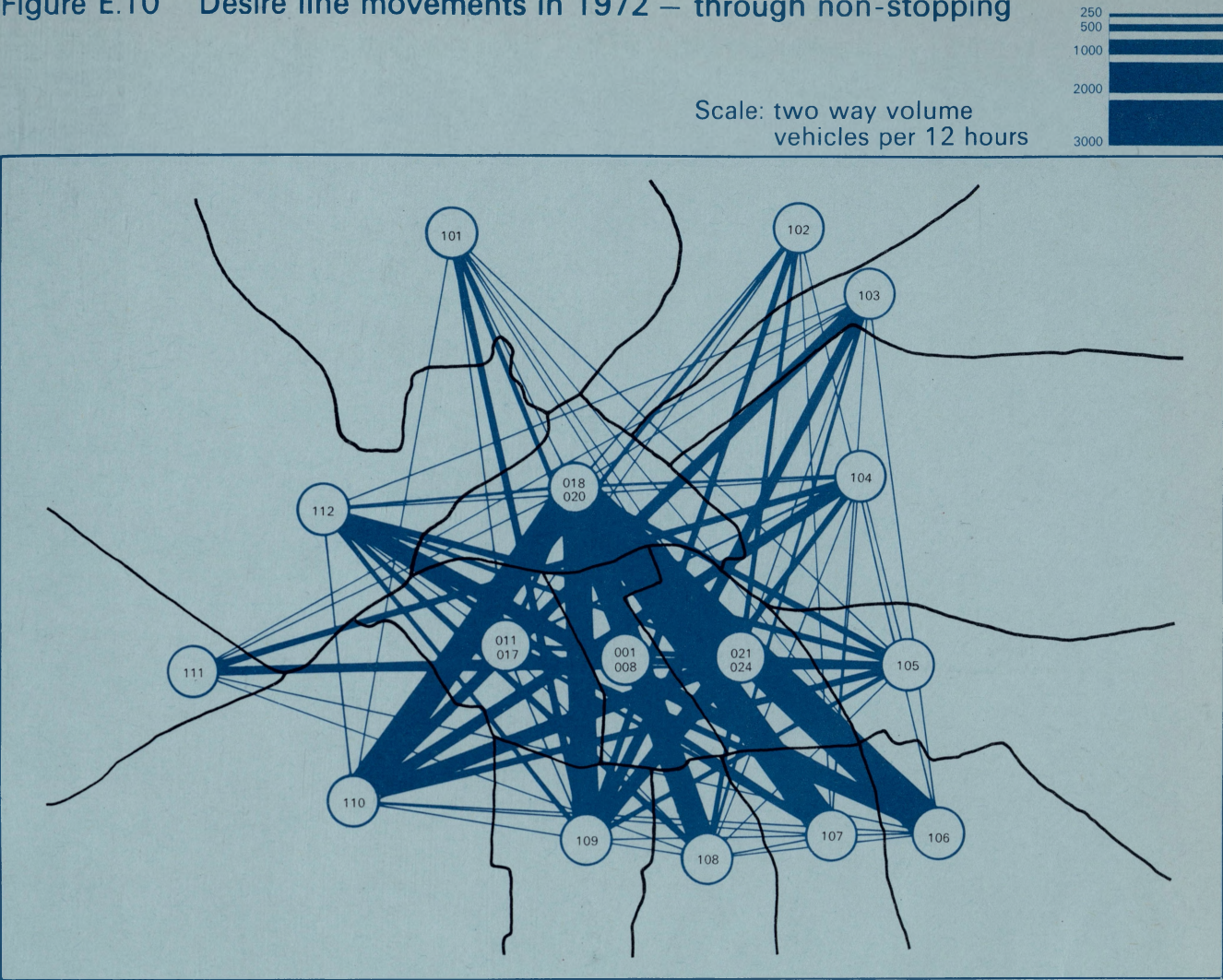




Figure E.11 Network diagram for 1972

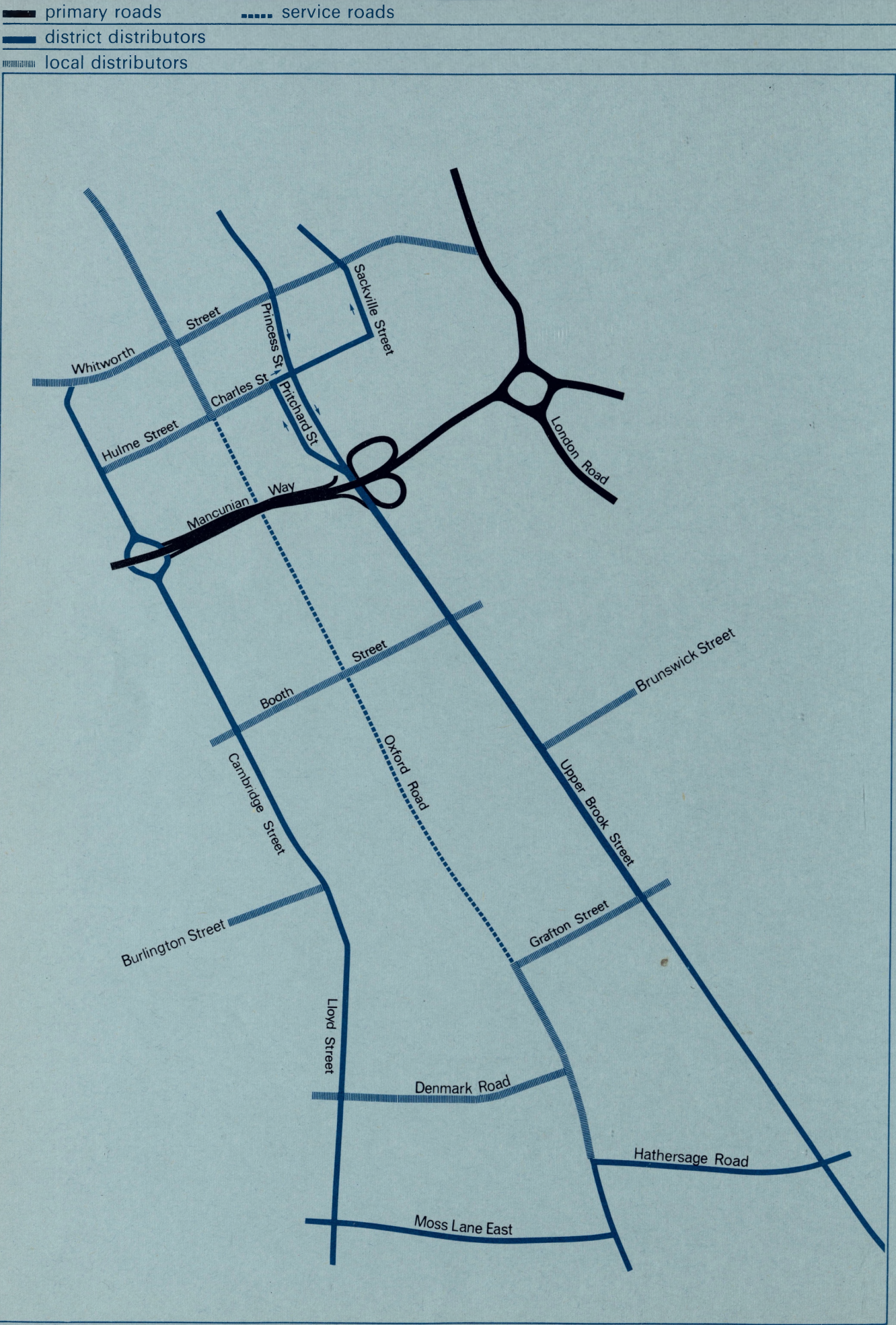




Figure E.12 1972 projected daily traffic flow

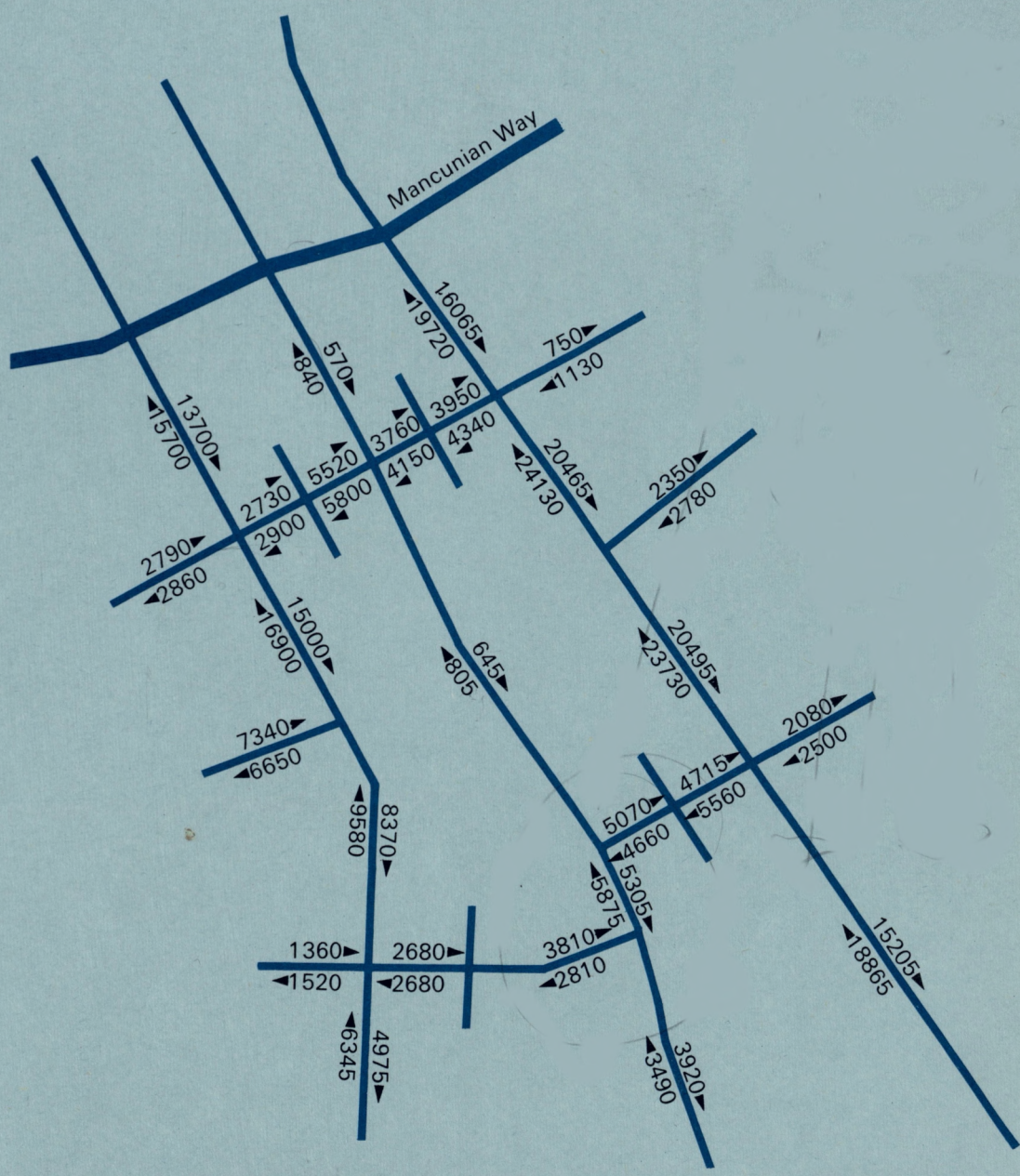




Figure E.13 1972 projected morning traffic flow

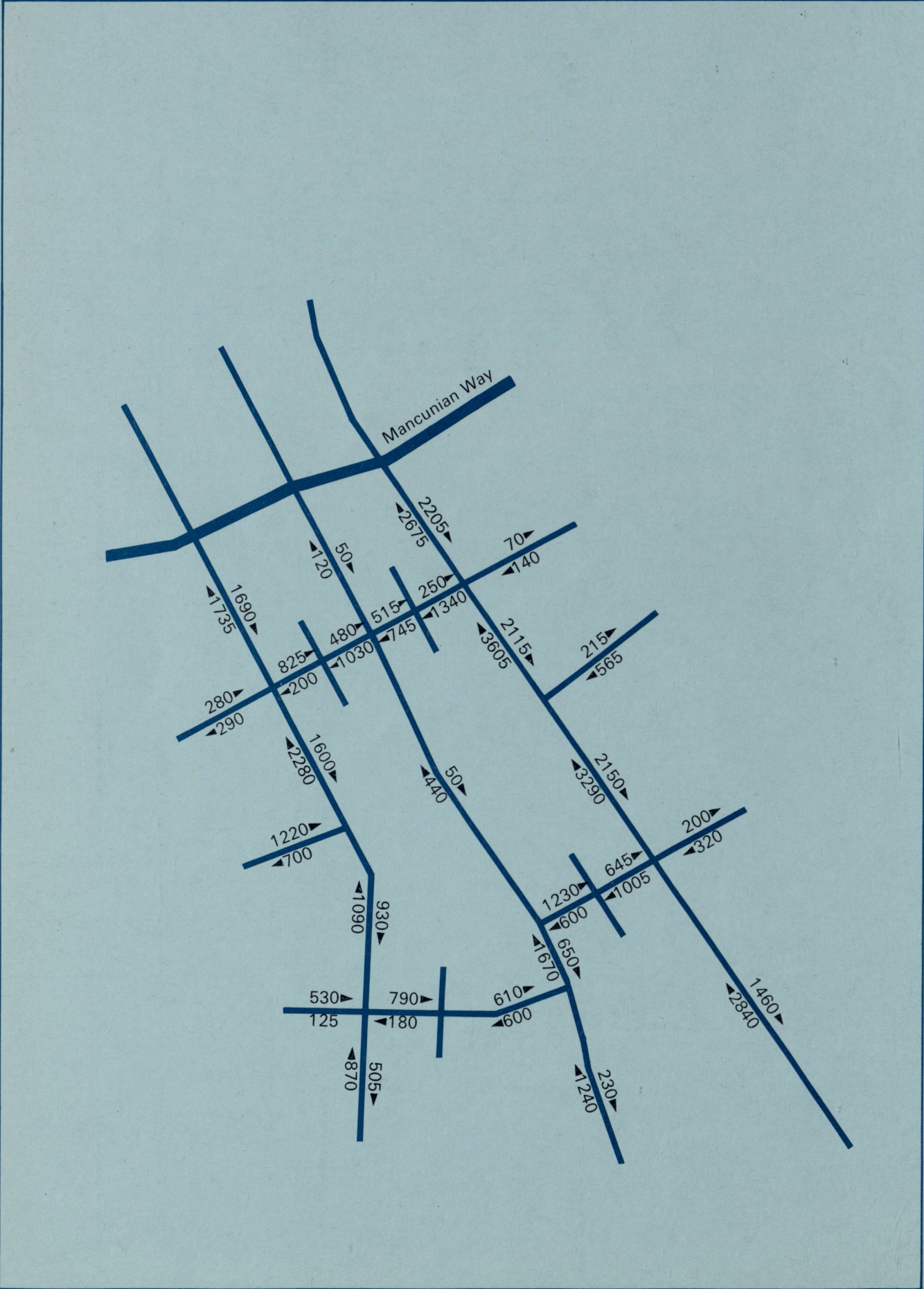
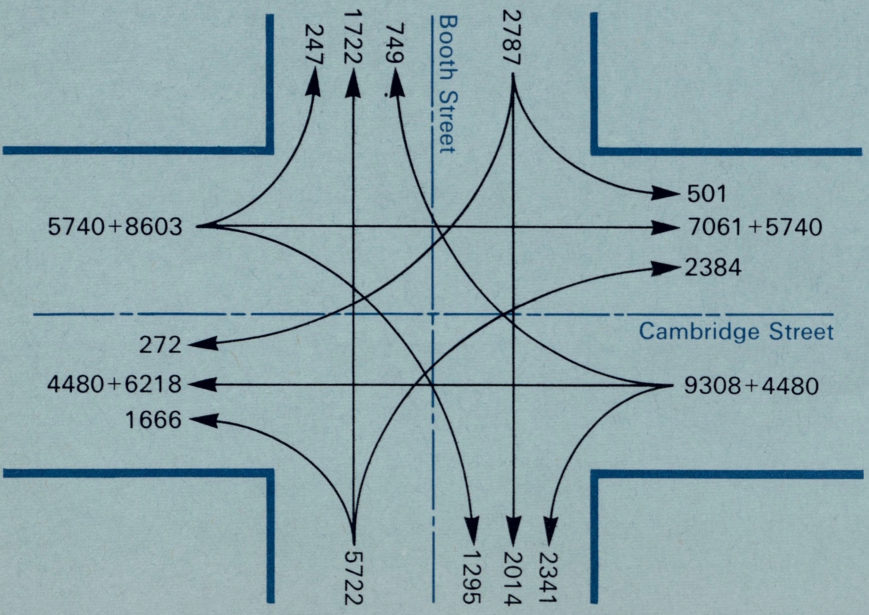
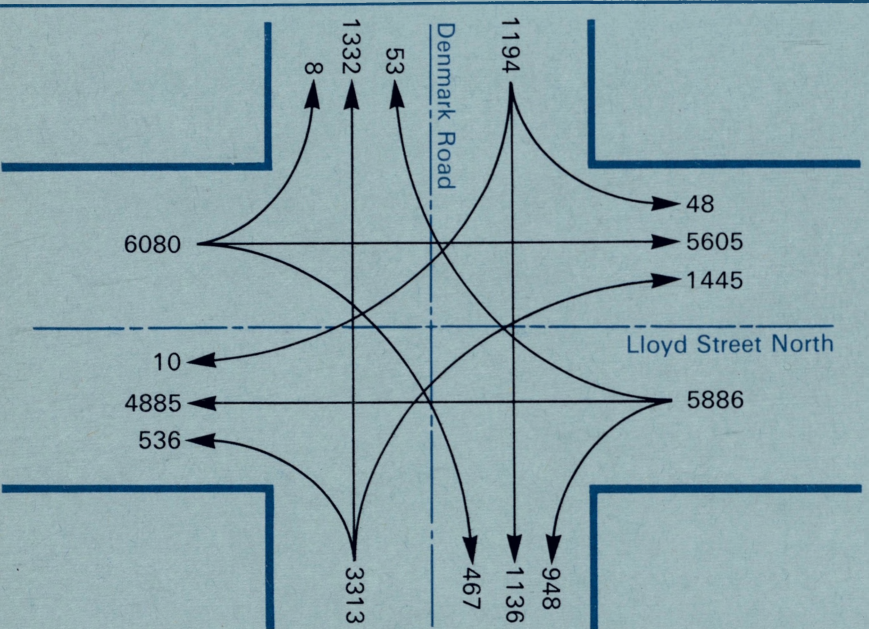
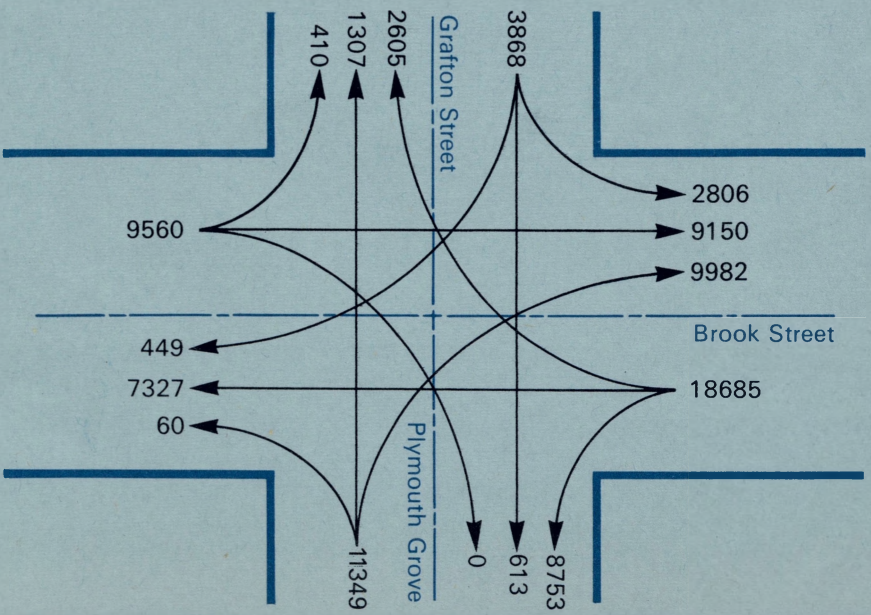
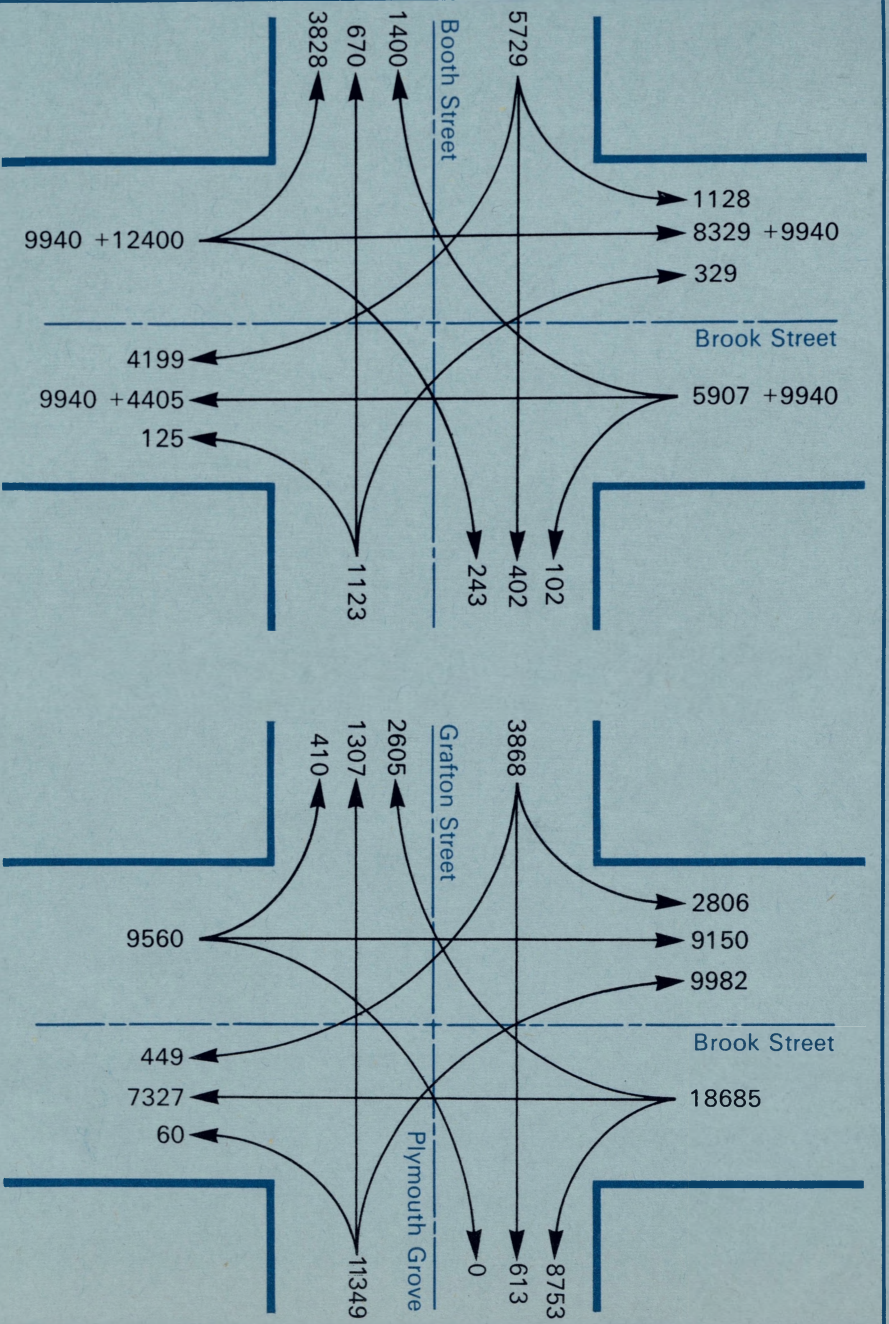




Figure E.14 Turning movements and 1972 flows





# Appendix F Noise

## Noise Sources

**F.1** The Precinct is situated near the centre of a large city and is, therefore, exposed to a high degree of urban noise. According to the replies received from staff to the questionnaire distributed as part of our survey, external noise already causes considerable annoyance to teaching staff. Of the total replies received, excluding medicals, 22% listed the noise conditions as unsatisfactory. Of these 19% specified traffic as the source, 27% specified the source as external, whilst a further 34% did not specify whether the source was internal or external.

**F.2** When the programme for road improvement is completed and the Precinct is bounded and bisected by major traffic routes, the noise from these roads may well interfere seriously with teaching.

**F.3** Although buildings should be planned and constructed to exclude or limit noise penetration, it is also important that the producers of transport vehicles should give more attention to the reduction of noise at its source; it may well prove to be far less costly to deal with the vehicle than with the buildings.

## The future extent of the problem

**F.4** The science of analysing noise propagation and noise control in the external environment is in its infancy, but there is sufficient information available to assess approximately the extent of the future problem. By estimating the noise output that might be expected from each of the roads which will ultimately border or pass through the Precinct, and then calculating the attenuation of the noise by distance across the site, a contour map of the noise levels on the site can be shown.

**F.5** Measured data suggests that when a road has a capacity of 12,000 vehicles per hour (v.p.h.), the noise output level is about 84 dB and there is little increase above this level from increased traffic volumes. This figure of 84 dB is the sound pressure level (s.p.l.) which is not exceeded for more than 10% of a measuring period. It must be pointed out that 'buses, which may produce a level in excess of 84 dB, may well prove annoying even though this noise may not last more than 10% of the time.

**F.6** The noise from a point source will reduce whilst travelling through the atmosphere, at a rate inversely proportional to the square of the distance from the source, i.e. 6 dB per doubling of distance. From a line source, the rate of reduction will be approximately half as much, i.e. 3 dB, as the pressure expands on a cylindrical front. Measured evidence suggests that between 100 and 500 feet, the rate of reduction will be somewhere in between these two values, about 4.5 dB.

**F.7** A contour map prepared from this information (Figure F.1) shows that only small areas of the site have average sound pressure levels of under 70 dB. It is possible to assess the extent of the problem in a crude manner by saying that a teaching room needs an internal noise level of about 30 dB, and a normal single glazed window will have an insulation value of about 20 dB. It must be stressed that a contour map of this nature is only a poor approximation of the problem as it does not take into account either the screening effects of one building upon another, or the build up of noise on elevated sections of road or at points of intersection.

**F.8** A further inaccuracy in the above assessment is that the s.p.l. expressed as a single figure does not take into account the human perception of loudness in different frequencies. A single figure may represent a noise, the main components of which are in the low frequency range, and although this noise may be annoying it may not coincide with the frequencies in which we speak.

**F.9** A relationship between annoyance and speech interference is perhaps the most accurate way of stating the tolerable internal levels for a given room. These levels would be expressed in figures which would allow higher noise levels in the lower frequencies than in the middle and high frequencies in which we speak. Thus for an accurate assessment of the problem the distribution of the external noise over the normal frequency range must be compared with the figures representing the tolerable internal levels:

Octave	37.5	75	150	300	600	1200	2400	4800
Band cps	75	100	300	600	1200	2400	4800	9600
External noise* (=70 dB)	64	65	65	63	56	51	46	38
Tolerable level for teaching	57	47	39	32	28	25	22	22
Excess noise	7	18	26	31	28	26	24	16

Table F.1

\*These figures are interpolated from figures for traffic noise at 86 dB given in British Standard Code of Practice C.P.3 Cn.111 1960.

Thus at a point on contour 70 dB there is an excess of noise which must be controlled either by insulation or by screening.

## Insulation

**F.10** Although there is information available giving the sound reduction coefficients of different types of window, they are usually given as single figures in dB. As the insulation effect of a window is not constant over the frequency range, it is not sufficiently accurate to use this single figure rating. There are, however, figures published which are said to be typical for 32 oz. openable single glazed windows:

Octave	37.5	75	150	300	600	1200	2400	4800
Band cps	75	150	300	600	1200	2400	4800	9600
Excess noise at 70 dB contour	7	18	26	31	28	26	24	16
Single glazed window insulation	—	16	11	17.5	25	28	26	—
Excess noise	—	2	15	13.5	3	—	—	—

Table F.2

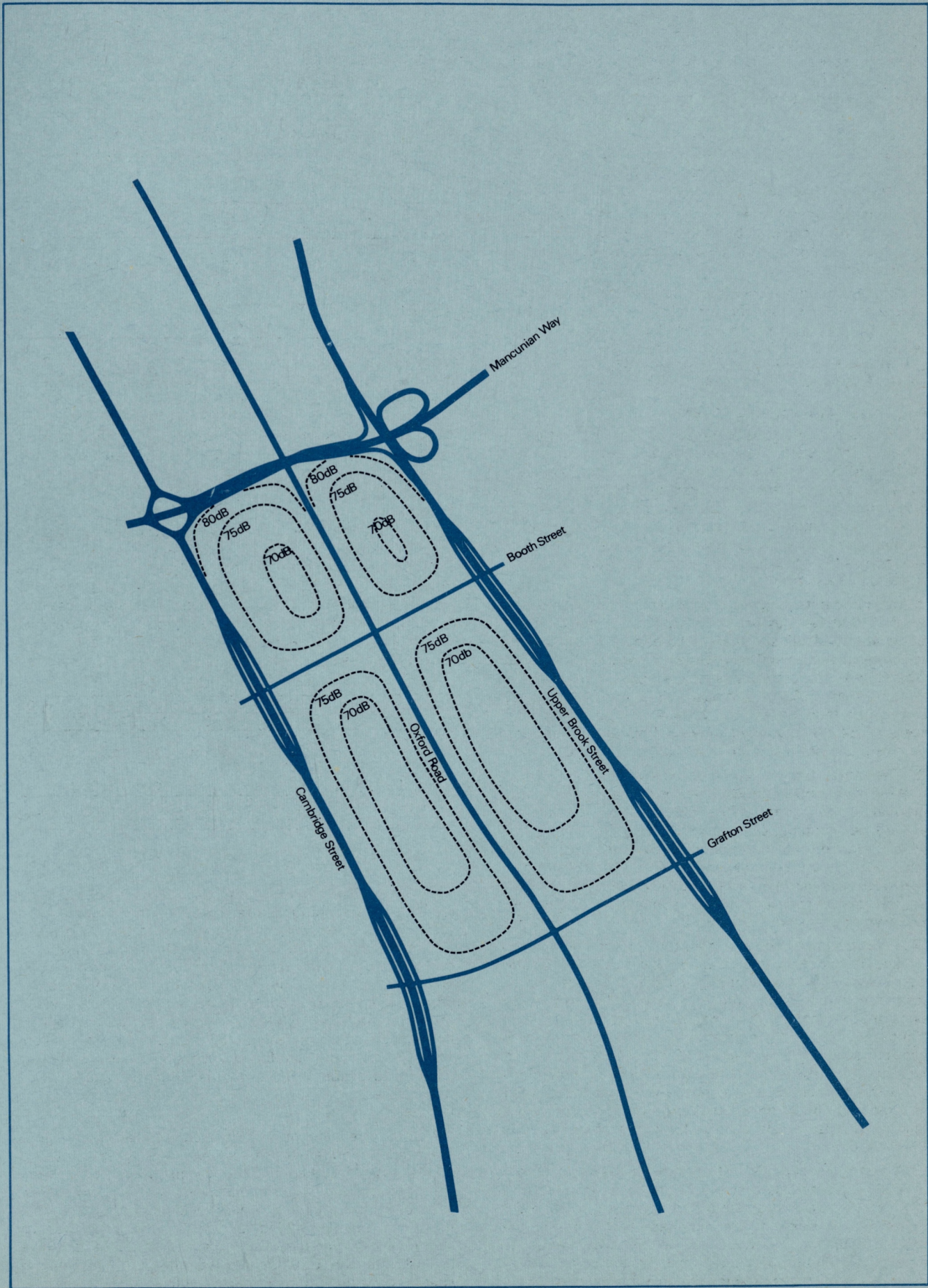
**F.11** The excess noise from this calculation must be reduced by screening before it reaches the windows. On the face of it, the situation does not seem too serious but it must be pointed out that the 70 dB contour represents one of the best conditions of the site. Also the main problem occurs when the windows are opened for ventilation. In this case one can only deduct between 5 and 10 dB from the external levels to allow for any reduction through the opening. This is the real crux of the problem and it needs very careful investigation unless sufficient money is available to make the use of double glazed windows general.

## Screening

**F.12** The screening of noise must be considered in both the overall arrangement of the buildings on the site, and in the design of the buildings themselves. Many of the buildings of the University have only one or two rooms, such as lecture theatres, which need full protection from noise. In many existing buildings, this protection is adequately provided by either shielding these sensitive rooms with the bulk of the building, or by adapting special construction techniques such as double glazing.



Figure F.1 Noise contours, University and City Colleges areas





**F.13** We feel that more could be done in this way to protect the more sensitive parts of individual buildings, and that a noise analysis should be an integral part of the design problem in these conditions.

**F.14** As planning consultants, however, we are also concerned with the overall noise environment as this is important to buildings, such as those providing study bedroom accommodation, which are totally susceptible to noise intrusion. We are also concerned with creating an environment in which the students can read and talk anywhere both inside and outside the buildings. Thus, in our layout plan, we suggest that the perimeter of the site should be ringed with buildings such as multi-storey car parks and laboratories and workshops, which will screen the heart of the Precinct from most of the noise which will be generated by traffic on the perimeter radial roads.

**F.15** The approximate screening afforded by a building obstructing the direct sound path is calculated from:

$$x = \frac{H^2}{\lambda R}$$
 where H = height of screen  
R = Distance Source to screen  
 $\lambda$  = wavelength  
The reduction x in dB is then = 10 log 20x.

**F.16** This approximate formula only applies where R is not less than H and is much smaller than the distance from the screen to the receiver (D). Otherwise the exact formula must be used:

$$x = \frac{2[R(\sqrt{1+(H/R)^2}-1)+D(\sqrt{1+(H/D)^2}-1)]}{\lambda[1+(H/R)^2]}$$

**F.17** By examining a test section on the contour map, the screening afforded to a 10 storey teaching block centrally placed between Upper Brook Street and Oxford Road by a 5 storey block along Upper Brook Street is:

Octave	37.5	75	150	300	600	1200	2400	4800
Band cps	75	150	300	600	1200	2400	4800	9600
At 10th floor	4.2	7.2	10.2	15.2	19.2	22.2	23.0	23.0
At 6th floor	10.1	13.1	16.1	19.1	22.1	23.0	23.0	23.0
At ground floor	11.9	14.9	17.9	20.9	23.0	23.0	23.0	23.0

Table F.3

**F.18** Thus when these reductions are compared with the excess noise insulated by a single glazed window:

—	2	15	13.5	3	0	0	—
---	---	----	------	---	---	---	---

Table F.4

it is shown that this screening will be adequate.

**F.19** It must be stressed that to be effective a screen must stretch a considerable distance either side of the receiving point. For our purposes, the screen must be continuous along the main traffic roads and the implication is that gaps between buildings must be filled by constructing earth banks and by landscaping.



## G.1 Temperature Mean minimum 1942 – 57 at Whitworth Park

Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
35.2	34.7	37.4	41.5	45.7	50.9	54.8	54.2	50.7	45.3	40.3	37.1

## G.2 Rainfall in inches at Whitworth Park

Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
3.5	2.2	2.1	2.1	2.3	2.5	3.3	3.9	3.1	2.9	3.1	3.3	34.3 inches

## G.3 Number of rain days (a) and wet days (b) lies between Ringway and Bolton (nearer to Ringway)

	Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
(a)	18	15	13	13	13	15	16	16	16	15	18	19	Ringway
(b)	13	11	9	9	10	11	12	13	12	11	13	15	
(a)	20	17	15	15	14	17	18	17	18	17	19	22	Bolton
(b)	15	12	11	11	11	12	14	14	15	13	15	17	

## G.4 Mornings with fog at Whitworth Park

Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
8.5	7.6	6.6	3.1	0.7	0.4	0.8	0.6	2.2	6.4	8.4	9.7	55 – highest in N.W. region

## G.5 Mean duration of bright sunshine at Whitworth Park

Jan.	Feb.	Mar.	Apl.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual Total
0.74	1.54	2.90	4.40	5.57	5.52	4.66	4.46	3.21	2.35	1.00	0.60	1126 25% of possible hours per day

## G.6 Wind direction at Ringway

Jan.	Feb./Mar.	Apl./May	June/July	Aug./Sept.	Oct./Nov.	Dec.	
4	6	5	3.5	3	5.5	4	N
5	10	10.5	4.5	4.5	6	5	NE
6.5	12.5	11	7	8.5	7	6.5	E
12	10	6	5	7.5	9.5	12	SE
30	18	17.5	14	21	25.5	30	S
13	12	11.5	15	17	14.5	13	SW
14	15.5	19	29.5	21.5	15	14	W
10	13	18	20	15	12	10	NW
5.5	3	1.5	1.5	2	5	5.5	Calm



# Appendix H    The total gross floor space required in the Precinct for retail and service trades

**H.1** The estimated gross floor space requirements for retail and service trades on the Precinct are given below in table H.1. In order to arrive at a realistic building programme the calculations have been made for two separate years, 1971 and 1984, as these represent two distinct phases in the growth of the Precinct. As the calculations are for the total amount of gross floor space required for

retail and service trades on the Precinct any existing floor space in these trades in the area must be taken into account when providing new facilities. It is envisaged, however, that the existing properties in the area will, for the most part, become subject to compulsory purchase and subsequent clearance before 1971.

	Gross Floor Space Required (sq. ft.)					
	1971			1984		
	Minimum	Average	Maximum	Minimum	Average	Maximum
Retail Shopping						
1. Total	57,600	71,100	81,100	81,900	100,500	114,300
2. Precinct Centre	51,800	64,400	73,800	74,800	92,300	105,400
3. Sub-Centre	5,800	6,700	7,300	7,100	8,200	8,900
Specialist Type Shops						
1. Total	19,000	20,000	21,000	25,000	26,000	27,000
2. Precinct Centre	15,000	16,000	17,000	19,000	20,000	21,000
3. Sub-Centre	4,000	4,000	4,000	6,000	6,000	6,000
Service Trading						
1. Total	11,200	13,500	14,500	16,000	19,300	20,800
2. Precinct Centre	9,500	11,400	12,200	13,800	16,600	17,900
3. Sub-Centre	1,700	2,100	2,300	2,200	2,700	2,900
Totals						
1. Overall total	87,800	104,600	116,600	122,900	145,800	162,100
2. Precinct Centre	76,300	91,800	103,000	107,600	128,900	144,300
3. Sub-Centre	11,500	12,800	13,600	15,300	16,900	17,800

**Table H.1** The amount of gross floor space required in the Precinct Centre and sub-centre for retail and service trading.

**H.2** The total space requirements are allocated between the Precinct Centre and a sub-centre. The sub-centre is designed to cater primarily for the immediate needs of those persons at the southern end of the Precinct who will not be within a convenient distance of the Precinct Centre. In addition, the sub-centre will cater for those specialist type shops which require a location near to the Hospitals.

**H.3** The method used for estimating the amount of retail and service trade floor space which will be required in the Precinct at the various dates consists of three steps.

**H.4** The first step involves the calculation of the amount of sales attracted to the future retail and service facilities. This will be dependent upon the population served and the amount they spend within the Precinct. The second step involves the adoption of an accepted level of sales per square foot of efficient floor space (the conversion factor) for each trade. The final step involves the division of the

sales by the conversion factor in order to arrive at the amount of floor space required for each trade.

## Step 1    a) The Population Served

**H.5** The calculation of the population served by the retail and service trades is derived from the estimates of the numbers of staff and students resident and working in the Precinct given in table H.2. In addition, it has been assumed that the Precinct Centre will act as the district centre for the population in those parts of the redeveloped residential areas of Brunswick and Hulme which are adjacent to the Precinct.

**H.6** For 1971 and 1984 the resident hinterland population in these adjacent areas will consist of:  
2,500 people living in part of the redeveloped area of Hulme 3  
1,200 people living in part of the redeveloped area of Brunswick 1

**Table H.2** Population served by the Retail and Service Trades.

	Full-time students	Part-time students	Academic Staff	Other Staff	Residents of those areas adjacent to the Precinct
1971					
University	8,800	—	1,164	2,200	—
Institute	3,400	—	459	1,453	—
John Dalton College	500	800	301	165	—
College of Art	1,000	200	200	83	—
College of Music	500	—	100	20	—
Adult Education	—	725	85	40	—
Hospitals/offices, etc.	1,390	—	3,610	—	—
Residents of adjacent areas	—	—	—	—	3,700
Totals	17,315	—	9,880	—	3,700
1984					
University	13,730	—	2,288	3,432	—
Institute	5,500	—	916	1,375	—
John Dalton College	500	800	300	165	—
College of Art	1,000	500	250	100	—
College of Music	600	—	100	20	—
Adult Education	—	725	85	40	—
Hospitals/offices, etc.	1,390	—	3,910	—	—
Residents of adjacent areas	—	—	—	—	3,700
Totals	24,745	—	12,981	—	3,700



**H.7** Before calculating the amount of expenditure likely to be attracted by the facilities, it is necessary to establish the total anticipated expenditure of the population served. In order to do this it must be recognised that three basic population groups are being catered for:

- i. Students (both under-graduate and post-graduate)
- ii. Staff
- iii. Residents living in the adjacent housing areas.

**Step 1 b) The total retail expenditure of the population**  
**i. Students**

**H.8** The basis used for the calculation of the annual per capita student expenditure on retail goods is the analysis of total expenditure by students of Glasgow and Birmingham Universities in 1956/7. These figures have been suitably corrected for likely changes in student expenditure which occurred between 1956/7 and 1961 and grouped under the appropriate trade headings given in the 1961 Census of Distribution (table H.3). For the purposes of the calculation it is assumed that all students spend on average the same total amount on retail goods.

		Total Annual Expenditure per Student	
		Average Student Expenditure (1956 survey) £'s	Estimated average student expenditure in 1961 £'s
(1) Students Living at Home			
Food	Food		
	Tobacco, news, etc.	14.6	17.1
Non-Food	Chemists, etc.		
	Clothing		
	Books		
	Instruments	57.5	70.95
Services	Meals out		
	Drinks	24.0	28.6
(2) Students living away from home			
Food	Food		
	Tobacco, news, etc.	42.0	49.5
Non-Food	Chemists, etc.		
	Clothing		
	Books		
	Instruments	56.05	69.2
Services	Meals out		
	Drinks	40.9	48.7

**Table H.3** Student Expenditure\*

\*These figures are taken from the published results of a survey in 1956/7 of students at Glasgow and Birmingham Universities (Scottish Journal of Political Economy Volume 4 1957). The categories have been suitably aggregated and corrected to tie in with the Census of Distribution 1961.

**ii. Staff and Residents**

**H.9** For the purposes of these calculations they have been grouped together, as it is assumed that their average per capita retail expenditure will approximate to the average

annual per capita retail expenditure of the North-West Region in 1961 (as calculated from the figures contained in the Census of Distribution for 1961) given in table H.4.

**Table H.4** Staff and Residents' Expenditure

\*Census of Distribution 1961.  
†Annual abstract of statistics 1961 (modified to produce figures for the North-West Region). Census of Distribution 1961.

Trade Categories		Total Annual Average Expenditure per capita 1961 £'s
Retail Trades*		
Food	Grocers & Provision Dealers	
	Other food retailers	
	Confectioners, tobacconists, etc.	92.3
Non-Food	Clothing & Footwear shops	
	Household goods shops	
	Other non-food retailers	
	General stores	71.6
Service Trades†		
	Cafes, restaurants, public houses	21.9
	Hairdressers, boot and shoe repairers,	
	electricity & gas showrooms, launderettes and	
	dry cleaners	4.8



**Step 1 c) The total service trade expenditure of the population**

**H.10** In order to calculate the possible total service trade expenditure of the population served by the facilities, the staff and residents have been considered under a single heading. It is assumed that their total annual per capita service trade expenditure will approximate to the average annual per capita service trade expenditure of the North-West Region in 1961 (as calculated from the figures given in the Census of Distribution for 1961 and the Annual Abstract of Statistics referring to the same year).

**H.11** It is assumed that student expenditure on hair-dressing and boot and shoe repairs, etc. will be the same as that of the staff and residents. The figures for student expenditure on meals out and drinks are contained in table H.3. (These figures include spending in student refectories and union bars, etc. The final floor space calculations make allowance for this.)

**Step 1 d) Calculation of the proportion of the total retail and service trade expenditure which will be attracted to the facilities provided on the Precinct**

**H.12** The total expenditure calculated for b) and c) must now be modified in the light of:

i. The nature of the centre. As a district centre the facilities will provide for the immediate and the less frequent needs of the population served. It is not anticipated that the centre will duplicate some of the more specialised facilities at present found only in the city centre. Accordingly, it is assumed that the total expenditure likely to be attracted will accord with the proportion of personal expenditure going to shops outside the central areas of the five cities in England with more than 500,000 population (excluding London). The basic information for this analysis is contained in the Census of Distribution for 1961. For the service trades the proportion of total expenditure attracted is taken as being the same as that going to the "hair-dressers" category in the five cities analysis. The inherent differences between the various cities give rise to differences in the proportion of personal retail and service trade expenditure going to shops outside their respective central areas. These proportions have been used to provide estimates of the minimum, the average and the maximum amount of personal spending likely to be attracted to the

Precinct (table H.5 gives details). These assumptions are taken to apply to both the staff of the Precinct and the residents of the adjacent housing areas. Students' expenditure on the Precinct is adjusted for the length of term on a pro-rata basis. The numbers who will stay in Manchester all the year round have also been taken into consideration in the calculations.

ii. The place of residence and work of the population served. For those students and staff living and working on the Precinct and for the residents in the adjacent housing areas it is assumed that the rate of expenditure outlined in d) i) above will apply. For those students and staff working on the Precinct but living elsewhere it is assumed that their total expenditure will be half of that outlined in d) i) above. This represents some 34% to 45% of total personal expenditure and accords closely with the results of our survey of the expenditure of students who were studying on the Precinct but living elsewhere (see table H.6 for full details). The assumptions do, however, reflect the higher attractive power which the future Precinct Centre and sub-centre will undoubtedly have.

**Table H.5**

The proportion of total personal spending attracted to shops outside the central areas of the five cities in England with 500,000–1,000,000 population

Source: Census of Distribution 1961

Formula:

Proportion of total personal spending going to shops outside the central area =  $\frac{\text{Total amount spent outside the central area of the city divided by the population of the city}}{\text{Total amount spent in the region divided by the population of the region}} \times 100$

Trade	Minimum Proportion %	Average Proportion %	Maximum Proportion %
Food			
Grocers, etc.			
Other food			
Confectioners, Newsagents, Tobacconists	87.4	97.7	104.6
Non-Food			
Clothing & Footwear			
Household goods			
Other non-food			
General Stores	36.6	58.4	70.8
Total Retail Trade	67.3	80.6	90.0
Hairdressers	68.8	82.4	88.9



	Number Reporting	Total Spending	Student Spending Spending on Precinct	Spending on Precinct as a proportion of total spending
		(pence average)	(pence average)	%
Those living at home	104	594	124	21
Those living in flats	113	1,062	411	39
Those living in digs	140	807	258	32
Those living in halls	195	622	205	33
Those not specifying	3	390	113	29
All types	555	747	240	32
Under Graduates				
Unspecified year	22	620	121	19
first year	182	726	213	29
second year	161	818	254	31
third year	127	648	178	27
fourth year	22	1,065	605	57
fifth year	6	579	270	47
Post Graduates				
Unspecified year	3	1,253	356	28
first year	15	606	378	62
second year	11	882	403	46
third year	2	252	78	31
fourth year	5	784	303	39
All years	556	744	239	32

Table H.6  
Amount spent by students during the survey week

Steps 2 and 3 The total floor space required for retail and service trading

H.13 The final step in the operation is to calculate the amount of floor space required. By using the sales conversion factors contained in the Skelmersdale New Town Planning Proposals Volume One, it is possible to convert the personal expenditure destined for the Precinct into gross floor space.

H.14 Tables H.7 and H.8 set out estimated expenditure and the appropriate minimum, average and maximum gross floor space requirements for 1971 and 1984.

H.15 It must be noted that no account is taken of the increase in *real* expenditure nor of the increase in floor selling space efficiency in the following estimates. All figures refer to 1961 values. It is assumed in the calculations that any rise in the rate of personal expenditure will be matched by a similar rise in the floor selling space efficiency of the shops for 1971 and 1984.

H.16 The results given in Section A of this Appendix are those which have been used in the formulation of the design proposals for the Precinct Centre. In fact the degree of success of the Precinct Centre will be dependent upon the letting policy adopted and the subsequent initiative of its traders and proprietors. It might well be feasible to accelerate the building programme towards the maximum values if all goes well (and vice versa). This has been allowed for in the inherent flexibility of the design proposals.

Table H.7 Estimated gross retail trade floor space (sq. ft.) for the Precinct in 1971 and 1984

Specialist Type Shops: The figures for Specialist Type Shops given in table H.1 are based on the existing provision.

Shop Type	Trade Category	Sales Conver- sion sq. ft. factors (£'s per sq. ft.)	1971 Hinterland			1984 Hinterland		
			Minimum sq. ft. (sales in brackets)	Average sq. ft. (sales in brackets)	Maximum sq. ft. (sales in brackets)	Minimum sq. ft. (sales in brackets)	Average sq. ft. (sales in brackets)	Maximum sq. ft. (sales in brackets)
Food Shops	Grocers & Provision Dealers	32						
	Other Food Retailers	30	32,400	37,500	40,700	44,800	51,900	56,300
	Confectioners, Newsagents, etc.	26	(sales £'s 944,420)	(sales £'s 1,093,490)	(sales £'s 1,188,070)	(sales £'s 1,302,260)	(sales £'s 1,507,610)	(sales £'s 1,637,960)
	Clothing & Footwear	25						
Non-Food Shops	Household Goods	20	25,200	33,600	40,400	37,100	48,600	58,000
	Other Non-Food	20	(sales £'s 532,450)	(sales £'s 740,400)	(sales £'s 892,830)	(sales £'s 778,740)	(sales £'s 1,065,920)	(sales £'s 1,279,550)
	General Stores	30						
Totals			57,600 (sales £'s 1,476,870)	71,100 (sales £'s 1,833,890)	81,100 (sales £'s 2,080,900)	81,900 (sales £'s 2,081,000)	100,500 (sales £'s 2,573,530)	114,300 (sales £'s 2,917,510)



Type of Establishment	Sales Conversion factors (£'s per sq. ft.)	1971 Hinterland			1984 Hinterland		
		Minimum sq. ft. (sales in brackets)	Average sq. ft. (sales in brackets)	Maximum sq. ft. (sales in brackets)	Minimum sq. ft. (sales in brackets)	Average sq. ft. (sales in brackets)	Maximum sq. ft. (sales in brackets)
Restaurants, cafes, pubs, etc.*	25	9,100 (sales £'s 227,500)	10,800 (sales £'s 270,000)	11,700 (sales £'s 292,500)	13,000 (sales £'s 325,000)	15,600 (sales £'s 390,000)	16,800 (sales £'s 420,000)
Launderettes and dry cleaners, hairdressers, boot and shoe repairers, electricity and gas showrooms, etc.	25	2,100 (sales £'s 52,500)	2,700 (sales £'s 67,500)	2,800 (sales £'s 70,000)	3,000 (sales £'s 75,000)	3,700 (sales £'s 92,500)	4,000 (sales £'s 1,000,000)
Totals	25	11,200 (sales £'s 280,000)	13,500 (sales £'s 337,500)	14,500 (sales £'s 362,500)	16,000 (sales £'s 400,000)	19,300 (sales £'s 482,500)	20,800 (sales £'s 1,420,000)

**Table H.8** Estimated gross service trade floor space (sq. ft.) for Precinct in 1971 and 1984

\*These figures make allowance for the existing refectory and bar facilities of the institutions on the Precinct

### Definitions

**A. Retail Shopping:** The retail trades included under this heading are those used by the Board of Trade in the Census of Distribution and Other Services 1961. The seven main retail trade groups given in the Census are grouped in this report to give two categories of retail trading. These are listed below:

food shops  
grocers and provision dealers  
other food retailers  
confectioners, newsagents, tobacconists  
non-food shops  
clothing and footwear  
household goods  
other non-food  
general stores

**B. specialist type shops:** The establishments covered by this definition are those which fall outside definitions A and C. These are as follows:

medical supplies and biological equipment  
dental supplies  
pharmaceutical supplies  
laboratory furnishers  
deaf aids and equipment  
optician and optical supplies  
chiropodist and surgical appliances  
post offices  
banks  
wholesale stationers  
business machines and equipment  
drawing equipment with photocopying and dyeline print facilities  
record exchange library  
original works art gallery  
second-hand book store-cum-library  
religious books  
robe and gown hiring  
signwriter  
travel bureau

**C. Service Trading:** The service trades included under this heading are as follows:

i. public houses  
cafes  
restaurants, etc.  
These are used by the Central Statistical Office

ii. launderettes and dry cleaners  
boot and shoe repairers  
hairdressers  
electricity showrooms  
gas showrooms  
These are used by the Board of Trade in the Census of Distribution and Other Services 1961.



I.1 The numbers of University students on the Precinct during the average day of survey week, 1965 are shown in Figure I.1. This pattern of occupation of the University area will be reflected in the demand for car parking space. Since all car drivers will not be in the University at the same time, the number of places required in car parks could be less than the number of trips made by car. The average time spent in the University area by students is 6 hrs. 20 mins.

I.2 Assuming car parking provision can keep pace with demand, the number of trips made by car drivers will be as follows:

	Full time students	Academic Staff	Other Staff*	Total
By survey 1965	573	488	171	1,232
Estimated 1972	1,103	873	320	2,296
Estimated 1984	2,287	1,647	858	4,792

\*not surveyed; average Manchester use assumed

I.3 The capacity of the surface car parks at the University in 1967 could be:

South of Booth Street West	380 places
South of Booth Street East	250 "
South of Dover Street	150 "
Spa Street car park	100 "
Various "front door" car parks	120 "
Total	1,000 "

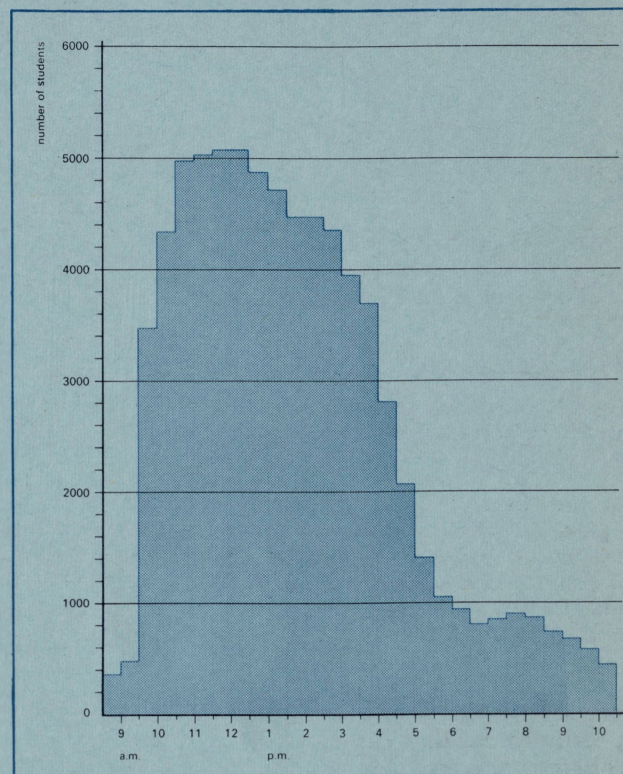


Figure I.1 Numbers of University students on the Precinct during the average day of survey week, 1965

I.4 The capacity of the car park areas in 1972 could be:

South of Booth Street West	260 (+120 required for Precinct Centre)
South of Booth Street East	292
South of Dover Street	750 in multi storey car park 360 surface places
Spa Street car park	150
Various "front door" car parks	120
Total	1,932

I.5 The capacity of the car park areas when fully developed with 5 storey structures could be:

South of Booth Street West	1,920
South of Booth Street East	1,340 (+120 retained for Precinct Centre)
South of Dover Street	2,280
Spa Street car park	500
Various "front door" car parks	120
Total	6,160



# Appendix J University Library use and calculation of future library space requirements

Library	University		Institute		Royal Manchester School of Music	Northern School of Music	Manchester College of Art and Design	E. Gaskell	J. Dalton	Com-merce	Totals
	UG	PG	UG	PG							
Unspecified	205	85	88	77	4	4	13	—	—	12	488
Departmental	1,438	323	341	54	—	—	—	—	—	—	2,156
University main	3,912	468	24	—	12	—	—	3	—	—	4,419
University Science	1,463	119	49	6	—	—	—	3	—	—	1,640
University Medical	24	238	3	—	—	—	—	—	—	—	265
Institute main	60	43	1,362	270	8	—	—	—	80	8	1,831
City Central	1,438	119	334	54	45	121	13	273	14	1,297	3,708
Miscellaneous local	145	—	—	28	—	—	—	8	—	53	234
City Colleges	—	—	—	—	16	28	259	228	76	335	942
Totals	8,685	1,395	2,201	489	85	153	285	515	170	1,705	15,683

**Table J.1**  
Student survey results showing number of half-hour periods spent by all students in all libraries on an average day

Library	Private Study	Social visits	Borrowing or returning books	Studying books on shelves	Browsing	Copying Services	Microfilm and Lingua-phones	Errors
Unspecified	41.1	22.6	4.8	12.1	4.0	8.1	—	7.3
Departmental	44.6	4.2	5.1	27.4	9.9	2.0	0.4	6.5
University main	47.8	0.6	4.8	40.4	2.6	1.3	0.4	2.1
University Science	35.4	1.0	3.3	53.8	3.3	2.5	—	0.8
University Medical	88.6	—	2.9	5.7	—	—	—	2.9
Institute main	50.0	0.7	5.1	35.5	2.5	4.6	0.3	1.3
City Central	42.3	1.5	6.8	46.6	3.5	2.2	0.8	0.2
Miscellaneous local	69.8	—	17.4	7.9	4.8	—	—	—
City Colleges	36.4	—	15.8	29.0	5.6	2.4	—	0.8
All libraries	44.6	2.0	6.1	38.3	4.1	2.5	0.4	2.1

**Table J.2**  
Student survey results showing the ways in which all libraries are used: each use expressed as a percentage of the total use

**Table J.3**  
Comparison with other University Libraries

\*When microfilm is included the number of works approaches 1 million  
Source: U.G.C. Returns from Universities and University Colleges 1963/64

	Manchester	Leeds	Birmingham	Oxford	Cambridge
Bound volumes	668,000*	562,000	628,000	3,080,000	2,949,000
Student/book ratio	1:113	1:90	1:126	1:344	1:322
Reader places	1,963	1,266	1,073	2,678	700
Reader places/students ratio	1:3	1:5	1:4	1:3	1:13



Status	Faculty	No. of Students/ Staff	% readers to total†	No. of readers	Area per reader in sq. ft.*	Reading space in sq. ft.
1964/5 Survey Year						
UG	All	5,185	20	1,037	25	25,925
PG	Arts	206	50	103	35	3,605
	Science	615	15	92	35	3,220
	Soc. Science	525	40	210	35	7,350
Staff	Arts/S.S.	570	50	285	35	9,975
	Science	518	20	104	35	3,640
Total 1964/5		7,619	—	1,831	—	53,715
UG	All	6,930	20	1,386	25	34,650
PG	Arts	333	50	166	35	5,810
	Science	920	15	138	35	4,830
	Soc. Science	715	40	286	35	10,010
Staff	Arts/S.S.	710	50	355	35	12,425
	Science	772	20	154	35	5,390
Total when student number reaches 8,900		10,380	—	2,485	—	73,115
UG	All	8,160	20	1,632	25	40,800
PG	Arts	438	50	219	35	7,665
	Science	1,110	15	167	35	5,845
	Soc. Science	820	40	328	35	11,480
Staff	Arts/S.S.	843	50	422	35	14,770
	Science	911	20	182	35	6,370
Total when student number reaches 10,500		12,282	—	2,950	—	86,930

Table J.4  
Calculations of demand for reading room space

\*Space per reader standard recommended by U.G.C.  
†Ratio of reader spaces to population adopted by York University

Table J.5  
Calculations of reading room provision

\*assuming 2 UG to 1 PG and Staff, i.e. reader space = 28 sq. ft.  
†assuming 50% total net library area

If it is assumed that 1 in 5 students will use their study bedroom for reading purposes at any one time, then the 200 rooms in Moberley Tower would count for 40 spaces and the figures shown in the end column above can be reduced accordingly

	Total net library & reading room area in sq. ft.	Net reading room area in sq. ft.	Number of reader places*	Reader spaces needed	Shortage
1964/5					
Dept. libraries	34,034	17,017†	663	—	—
Main library	54,466	14,978	535	—	—
Science	18,123	9,062†	323	—	—
Total 1964/5	106,623	41,057	1,521	1,831	310
When student numbers reach 8,900					
Dept. libraries	44,544	22,272†	795	—	—
Main library	54,466	14,978	535	—	—
Science	18,123	9,062†	323	—	—
Total when student numbers reach 8,900	117,133	46,312	1,653	2,485	832
When student numbers reach 10,500					
Dept. libraries	58,254	29,127†	1,040	—	—
Main library	54,466	14,978	535	—	—
Science	18,123	9,062†	323	—	—
Total when student numbers reach 10,500	130,843	53,167	1,899	2,950	1,051
Proposed UG reading rooms	—	25,000	1,000	—	—
Corrected total	—	78,167	2,899	2,950	51



	Areas in sq. ft.
STAGE 1—Undergraduate library	
‡1,000 reader spaces at 25 sq. ft. each:	25,000
‡40,000 books on closed access at 35 sq. ft./1,000 books	1,400
Total undergraduate library	26,400
STAGE 2—15,000 students, 2 million books	
*4,202 reader spaces at 28 sq. ft. each	117,656
Assume there is an increase of 50% in departmental space provided in 1971/2 then total net departmental reading room space =	43,690
Total reading room space in main library	73,966
‡2 million books mainly on open access at 60 sq. ft./1,000 books	120,000
Total reader/book space	193,966
†Administration at 12/88 of this	26,448
Total functional space	220,414
†Total library space if functional space is 79% of total	278,005
Deduct space in existing—	
Main library           86,746	
UG library           26,500	113,246
Gross area of new construction	164,759
STAGE 3—15,000 students, 3 million books	
Total reading room space in main library	73,966
‡3 million books mainly on open access at 60 sq. ft./1,000 books	180,000
	253,966
†Administration at 12/88 of this	34,632
Total functional space	288,598
†Total library space if functional space is 79% total	365,313
Deduct Main library and UG library	113,246
Gross area of new construction	252,067
Or an additional	87,308

**Table J.6**  
Calculation of space requirements for the University library

\*an overall provision of 1 seat for 3·5 students from previous calculation  
†a standard deduced from an analysis of new library projects at the Universities of Edinburgh, Warwick, Essex, Kent and Lancaster (published in the Architects' Journal 24th March, 1965) viz:  
functional areas   79% (reader/book space 88%, Admin. 12%)  
ancillary           11%  
circulation        10%  
‡U.G.C. space standard



# Appendix K    University mid-day meals

	Number of student half-hours reported	% of total reported
University Refectory	3,666	44
University Student Union	2,826	34
Elsewhere on Precinct	463	17
Elsewhere off Precinct	1,406	5
Total	8,361	100

Table K.1

Number of University student half-hours spent in dining facilities during the lunch-time period 11.30 a.m. to 2.00 p.m. on the average day of survey week 1965

Source: Student Survey

Note: This was before the full opening of Owens Park

# Appendix L    Institute car parking

L.1 The numbers of Institute students on the Precinct during the average day of survey week 1965 are shown in Figure L.1. The average time spent by students at the Institute is 6 hrs. 40 mins.

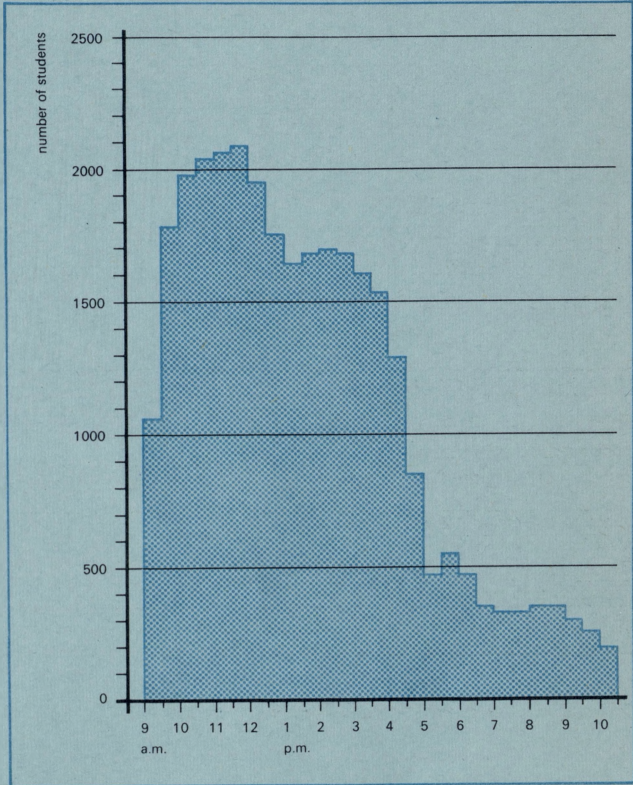


Figure L.1 Numbers of Institute students on the Precinct during the average day of survey week, 1965

L.2 Assuming car parking provision can keep pace with demand, the number of trips made by car drivers will be as follows:

	Full time students	Academic Staff	Other Staff	Total
By survey 1965	253	101	99	453
Estimated 1972	558	229	211	998
Estimated 1984	738	687	344	1,769

L.3 The capacity of the surface car parks at the Institute in 1967 could be:

Area A and C	230 places
Area B	350 "
Total	580 "

L.4 The capacity of the car park areas in 1972 could be:

Area A and C	230 places
Area B	900 " in multi-storey car park
Total	1,130 "

This will be greater than requirements at that date but will quickly fall below the demand.



# Appendix M Institute Library use and calculations for future library space requirements

Status	Total no.	% readers of total†	No. of readers	Area per reader in sq. ft.*	Reading Room area
1964/5 survey year					
UG	1,770	20	354	25	8,850
PG	518	20	103	35	3,605
Staff	318	20	76	35	2,660
Total 1964/65	2,606	—	533	—	15,115
1967/68					
UG	1,770	20	354	25	8,850
PG	1,030	20	206	35	7,210
Staff	466	20	93	35	3,255
Total 1967/68	3,266	—	653	—	19,315
1971/72					
UG	2,000	20	400	25	10,000
PG	1,400	20	280	35	9,800
Staff	566	20	113	35	3,955
Total 1971/72	3,966	—	793	—	23,755
1984					
UG	2,500	20	500	25	12,500
PG	2,500	20	500	35	17,500
Staff	840	20	168	35	5,880
Total 1984	5,840	—	1,168	—	35,880

**Table M.1**  
 Calculation of demand for reading room space

\*space per reader standard recommended by U.G.C.  
 †ratio of reader spaces to population adopted by York University

**Table M.2**  
 Calculation of reading room provision

\*Actual number as quoted in the Institute Librarian's Report, Nov. 1964  
 †Same standard as Civil Engineering Library has been assumed  
 ‡At 30 sq. ft. per seat allowing for equal numbers of UGs and PGs/staff

	Total net library and reading room area in sq. ft.	Net Reading room area in sq. ft.	No. of Reader spaces provided	No. of Reader spaces needed	Shortage as area in sq. ft.
1964/65					
Main Building	14,170	7,550	302*	—	—
Chemical Engineering	1,810	—	—	—	—
Renold	2,480	2,400	96*	—	—
Civil Engineering	2,290	1,450	50*	—	—
Paper Science	130	—	—	—	—
Total 1964/65	20,880	11,400	448	553	31,715 (85 seats)
1967/68					
Provision as above	20,880	11,400	448	—	—
Chemistry	3,430	2,160	86†	—	—
Total 1967/68	24,310	13,560	534	653	5,755 (119 seats)
1971/72					
Provision as above	24,310	13,560	534	—	—
Maths & Soc. Science	6,470	4,076	163†	—	—
	30,780	17,636	697	793	6,119 (96 seats)
Expansion within Main Building up to total of 40,000 sq. ft.					
Total 1971/72	56,780	30,636	1,130	793	—
1984					
Provision as above + any other provision made on Student Quarter which is far removed from any central library	56,780	30,636	1,130	1,168	—



3,400 students		Area in sq. ft.
a) Student:book ratio 1:78 (Imperial College standard)		
265,200 books at 60 sq. ft./1,000 books	=	15,900
Reading room space needed	23,755	
Provided in departments	10,086	
	13,669	
To be provided in main library		13,669
		29,569
Administration at 12/88 of above		4,032
		33,601
If this is 79% then 100%	=	42,533
3,400 students		
b) Student:book ratio 1:64		
217,600 books at 60 sq. ft./1,000 books	=	13,056
Reading rooms as above	=	13,669
		26,725
Administration at 12/88 of above		3,636
		30,361
If this is 79% then 100%	=	38,431
This represents the area of library accommodation required by the Institute in 1971/72.		

**Table M.3**  
Calculation of library space required in 1971/72

5,000 students		Area in sq. ft.
Student:book ratio 1:78		
390,000 books at 60 sq. ft./1,000 books	=	23,400
Reading room space needed	35,880	
Department libraries at say 1½ times	15,129	
The 1971/72 provision to be provided in main library	20,751	20,751
		44,151
Administration at 12/88 of above		6,020
		50,171
If this is 79% then 100%	=	63,508
This represents the area of library accommodation required by the Institute in 1984.		

**Table M.4**  
Calculation of library space required in 1984



# Appendix N     Institute mid-day meals

Number of Institute half-hours spent in dining facilities during lunch-time period 11.30 a.m. to 2.00 p.m. on the average day of survey week 1965

	Student half-hours	% of Total
Institute Refectory	1,410	38
Institute Student Union	990	27
Elsewhere on Precinct	640	17
Elsewhere off Precinct	645	18
Total	3,685	100

Source: Student survey

New refectory facilities have since been opened.

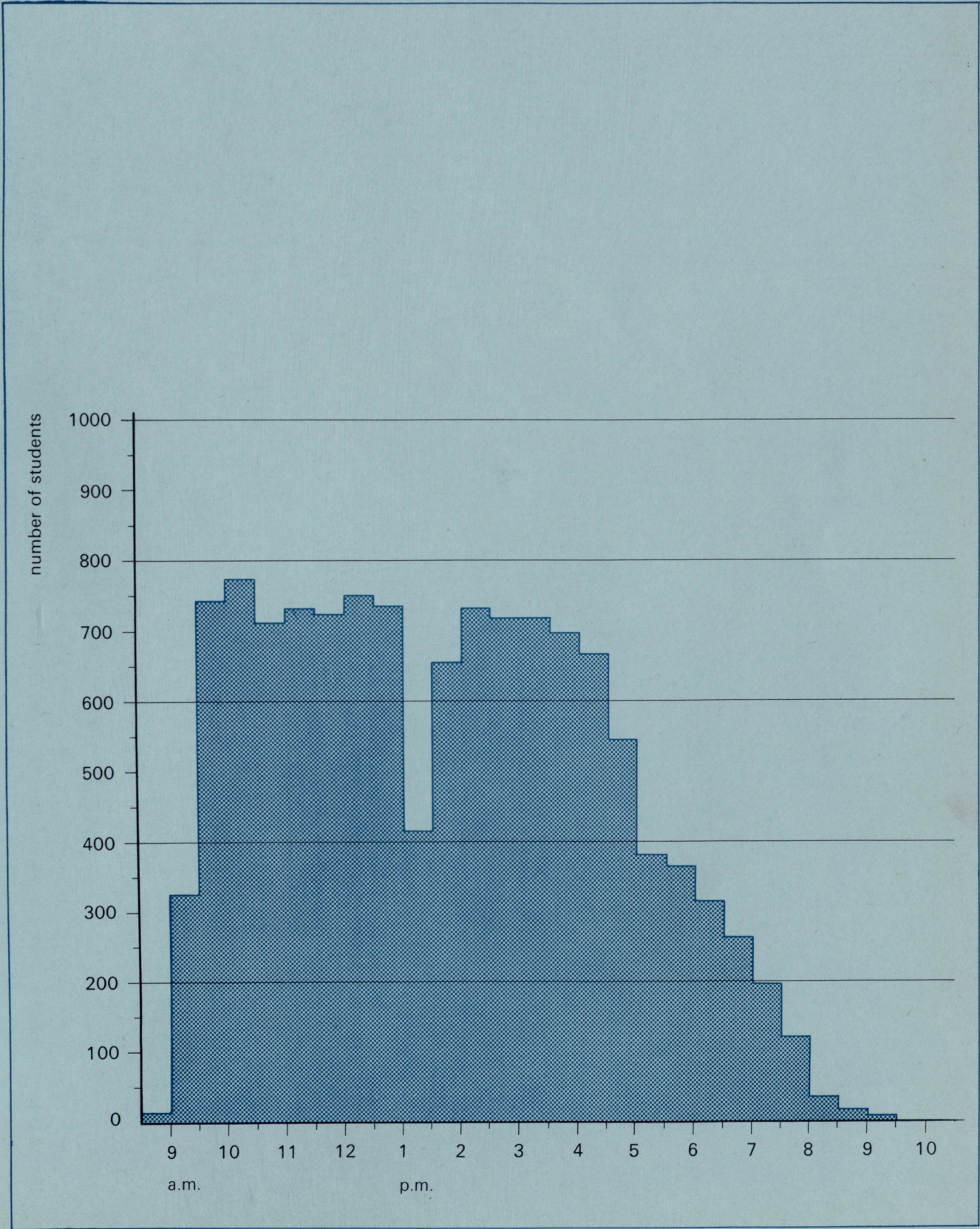


# Appendix O City colleges car parking

O.1 For the City Colleges the car parking requirements are in three groups; the College of Commerce at the city centre end of the Precinct, the Elizabeth Gaskell College at the extreme southerly end and a group consisting of all the others on the Precinct in the area north of Booth Street

West and south of the railway. Figure O.1 shows the numbers of full-time students on the Precinct grouped in this way. The average time spent by students at the John Dalton College, the College of Art and the Northern School of Music taken together is 6 hrs. 30 mins.

Figure O.1 Numbers of City Colleges students on the Precinct during the average day of survey week, 1965





O.2 Assuming car parking provision can keep pace with demand the number of trips made by car drivers will be as follows:

	Full time students	Part time students	Academic Staff	Other Staff	Totals
College of Commerce					
1965	11	5	85	4	105
Estimated 1972	30	12	217	9	269
Estimated 1984	45	18	225	15	303
Elizabeth Gaskell College					
1965	14	—	32	6	52
Estimated 1972	29	—	68	12	109
Estimated 1984	35	—	68	20	123

Table O.1

	Full time students	Part time students	Academic staff	Other staff	Totals
1965*					
John Dalton	44	237	66	7	354
College of Art	198	72	75	6	351
N.S.M.	40	12	17	1	70
Totals	282	321	158	14	775
Estimated 1972					
John Dalton	320	582	226	24	1,152
College of Art	436	175	175	14	800
N.C.M.	73	—	75	3	151
Adult Education	—	105	64	6	175
Totals	829	862	540	47	2,278
Estimated 1984					
John Dalton	375	600	225	41	1,241
College of Art	900	150	175	24	1,249
N.C.M.	150	—	90	6	246
Adult Education	—	181	64	10	255
Teacher Training	250	—	83	12	345
Totals	1,675	931	637	93	3,336

Table O.2  
Number of trips made by car drivers

\*Full time students by survey. Part time students assumed to travel similarly to full time students. Staff assumed to travel similarly to staff at the University

O.3 The capacity of the surface car parks in 1967 could be:	
At John Dalton College	75 places
Under Mancunian Way	140 "
"Paulden" site	132 "
North of Booth Street West	245 "
	592 "

O.4 The capacity of the car park areas in 1972 could be:	
At John Dalton College	75 places
Under Mancunian Way	100 "
(40 places reserved for new offices)	
North of John Dalton	300 "
North of Booth Street West	1,420 "
(in 5 storey car park)	
	1,895 "

O.5 The ultimate capacity of the car park areas in 1984 could be:	
At John Dalton College	75 places
Under Mancunian Way	100 "
North of John Dalton	1,480 "
(in 5 storey car park)	
North of Booth Street West	1,420 "
(in 5 storey car park)	
Various "front door" car parks	75 "
	3,150 "











